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ORIGINAL ARTICLES

PRINCIPLES OF ORTHODONTIA IN THE TREATMENT OF MAXILLO-FACIAL INJURIES*

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THE subject of "The Principles of Orthodontia in Maxillo-Facial Surgery" which has been selected for me to present to you today, covers such a broad field, possesses such an enormous quantity of material and carries with it such an obligation, that it will be impossible, within any reasonable time, to even present the fundamental principles by comparison with those of orthodontia.

In order that I may not be misunderstood, I wish to qualify that which I may present to you by stating in the outset that the successful treatment of maxillo-facial injuries in all of the nations engaged in the world war was founded in the recognition of orthodontic principles. Without dwelling in detail on this fact, let me state that this work owes a very great deal to orthodontia, and now orthodontia owes sufficient to maxillo-facial surgery to digest the work which has been done with the view of profiting by experience, and to standardize basic principles.

Every specialty in the healing art is bounded on all sides by other specialties, and this subject is a portion of that phase of orthodontia which borders upon oral surgery. This work has presented greater than ever before the indispensable value of cooperation between groups of specialists, and it behooves the orthodontist both in justice to himself and to his specialty to be prepared to cooperate with other specialists in this branch of work, and as it appears to one who can fully realize by experience that the orthodontist is fundamentally better qualified for this work. This subject should be very seriously considered by orthodontists and should always be incorporated in postgraduate courses of orthodontia.

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In appearing before you upon this subject today, I realize a sense of very great obligation in that it is within my grasp to mould a conception within your minds which will either be encouraging or discouraging to you, or which will stimulate you to seek more knowledge of this work, or may cause you to feel that it is a subject which you may set aside.

As a member of the Dental Corps of the Army and as an orthodontist, I feel

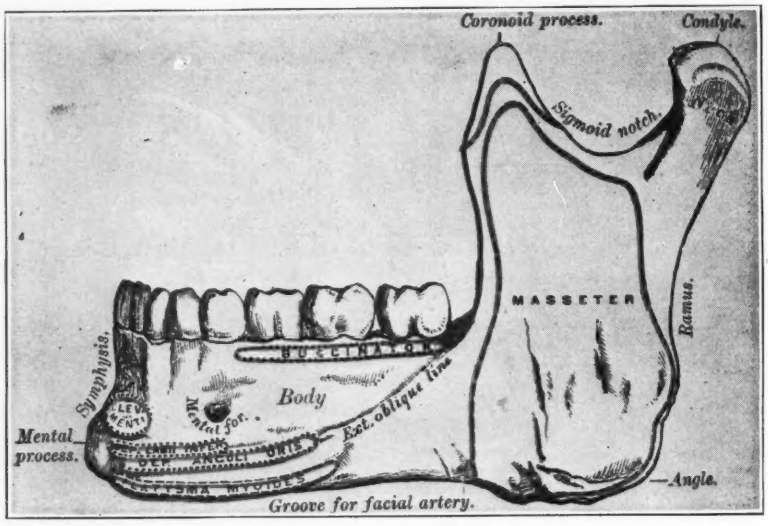

Fig. 1.

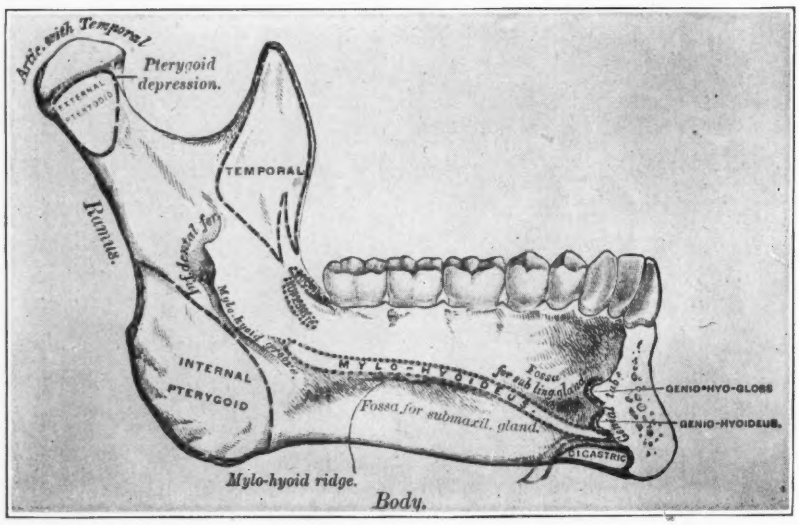

Fig. 2.

it my duty to impress the importance as well as the seriousness of this subject, and to urge upon the younger men, especially, that they should procure and study all the literature available and consider this branch of orthodontia as a necessity in personal efficiency in order to become proficient operators whenever needed.

Orthodontia is that branch of science which deals with the prevention and correction of malocclusion of the teeth and surrounding parts. In the treatment

of maxillo-facial injuries the analysis of this definition implies that the mechanical work should prevent as many complications as is possible in the emergency treatment, and should then correct the deformities.

In orthodontia, etiology is a very broad subject, and is the first step in diagnosis. In maxillo-facial injuries the primary causative agent is some form of external violence which produces conditions which must be recognized in the form of classical symptoms and conditions to be overcome. For this the orthodontist must possess an intimate knowledge of the structural formation of the bones of the face, and an intimate knowledge of the relations to, and the effects of, the muscles operating both collectively and individually in the control of the movements of the bones.

In orthodontia, diagnosis is founded upon normal occlusion as the ideal to which to aspire. In maxillo-facial surgery, diagnosis is founded upon restoring the *original* occlusion, assuming in both instances that the harmony of the fea-

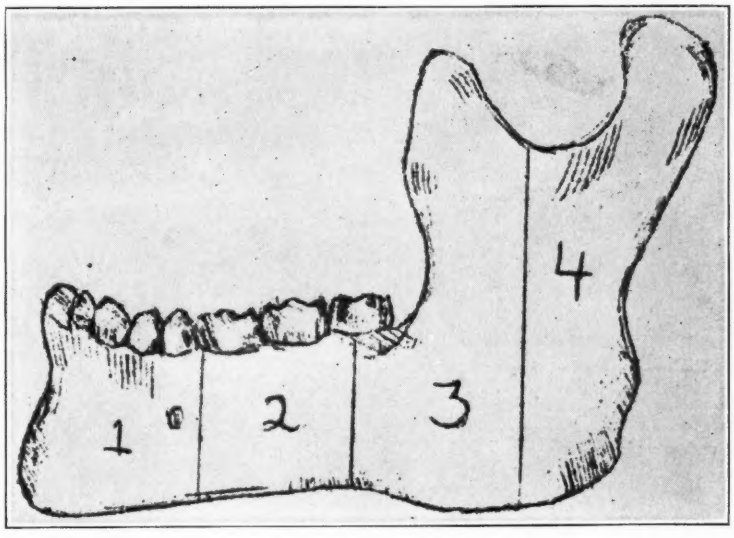

Fig. 3.

tures will be controlled desirably by the results accomplished in the substructures. In the superior maxillæ, fractures may be classified as horizontal and vertical or their combinations, and diagnosis based upon the return of the displaced fragments to their original positions. In the mandible, fractures may be classified by two methods, each of which are thoroughly comprehensive and it may be stated that both methods require perfection. The French have adopted a very effective method of classification using the muscular attachments as the basis. By dividing the mandible into sections to which the depressing and elevating muscles are attached, their classification is:

(A) Interdepressor Fractures
(B) Preelevator Fractures
(C) Interelevator Fractures
(D) Postelevator Fractures

Figs. 1 and 2 illustrate the muscular attachments of the outer and inner sur-

faces of the mandible. Interdepressor fractures are those through the symphysis between the digastric fossæ which are influenced by the depressor muscles attached through that region as shown in Zone 1 of Fig. 3.

Preelevator fractures are those situated through the body of the mandible, the anterior segments of which are influenced by the depressor muscles, the posterior segments influenced by the elevator muscles as shown in Zone 2 of Fig. 3.

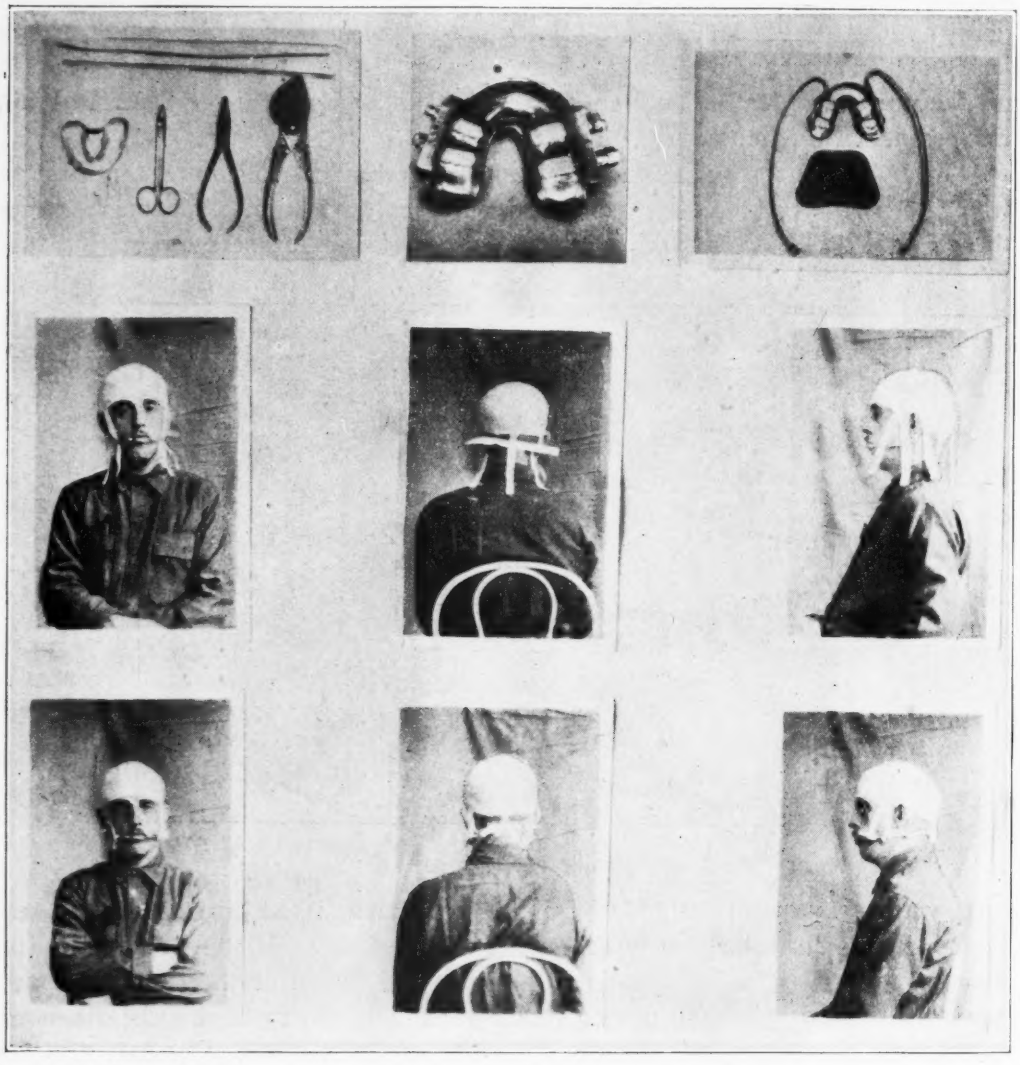

Fig. 4.

Interelevator fractures are those fractures through the ramus which traverse the insertion of the masseter and internal Pterygoid muscles as shown in Zone 3, Fig. 3.

Postelevator fractures are those through the sigmoid notch and the neck of the condyle as shown in Zone 4, Fig. 3.

This classification affords a very comprehensive study of the lines of displacement by the uncontrolled action of groups of muscles with the result that a certain standardization of orthodontic apparatus may be adopted accordingly.

The above classifications deal with the mandible through the medium of its muscular attachments and not with the bone itself. If we consider the fact that we are dealing with the bone as the site of injury, and the muscles as a condi-

Fig. 5.

tion, it seems that the classification of fractures should be founded within the bone. By dividing the bone into the symphysis, body, and ramus, fractures should be classified as Classes 1, 2, and 3, respectively, and each of these classes should be subdivided sufficiently to give definite location and to recognize the oblique lines of fracture both bucco-lingually and inferior-superiorly. When this classification is perfected and recognized as the standard, then it will be possible to standardize methods of splinting on a corresponding basis.

In orthodontia, tooth movement and retention is the object to be effected, by means of the anchorage of certain mechanical apparatus upon the teeth. In maxillo-facial surgery, the movement of bone fragments *en masse* and their retention is the object by the attachment of mechanical apparatus on the teeth. The problems of anchorage are similar in many respects, but vary with conditions of environment, etc. Insofar as dynamics are concerned, the use of the screw and ligature which we consider intermittent forces is naturally indicated for immediate traction along the lines of reduction, and for control during retention. Where fractures are partially solidified in malposition or where adhesions cause malposition, the principles of dynamics must be exactly the same as in the movement of individual teeth for which a mild constant stimulus of an elastic or spring forces is indicated, the same physiologic processes being called into action in their gradual reduction and the growth of new bone.

In orthodontia, the principles of retention are to secure teeth in their desired positions, preferably allowing certain actions in the forces of occlusion for finer adjustment and a stimulus for bone growth. In maxillo-facial surgery, the identical principles are best, but vary in purpose and duration. If there is a simple fracture, retention is complete upon solidification. If there is loss of substance in the bone, retention is complete upon the fusion of the fragments by the growth of new bone after surgical procedure.

The foregoing comparisons describe how intimately the treatment of more extensive injuries is similar, with slight variations, to every detail in orthodontia, and it has been noted without a single exception among the operators treating maxillo-facial injuries that those men with the knowledge of orthodontia who recognize the most effective treatment in their diagnosis, will apply the best forces over the best anchorages, will always show due regard for the patient's comfort in the production of simplest forms of apparatus effective in all requirements, whereas the operator without the knowledge of orthodontia applies poorly selected forces over clumsy anchorages, and will usually construct fantastical apparatus of no basic design, operating materially against the patient's and his own comforts.

I wish to submit a few illustrations to endeavor to substantiate the foregoing comparison, and to present a few cases in the review of these principles. These slides are submitted to be considered from the standpoint of general principles and do not represent any effort to enter into details, for sobroad is the scope of this subject that nothing less than a text could contain it.

SUPERIOR MAXILLARY FRACTURES

In the classification of superior maxillary fractures as Horizontal, Vertical and Horizonto-vertical, the Kingsley principle of cranial anchorage applies uni-

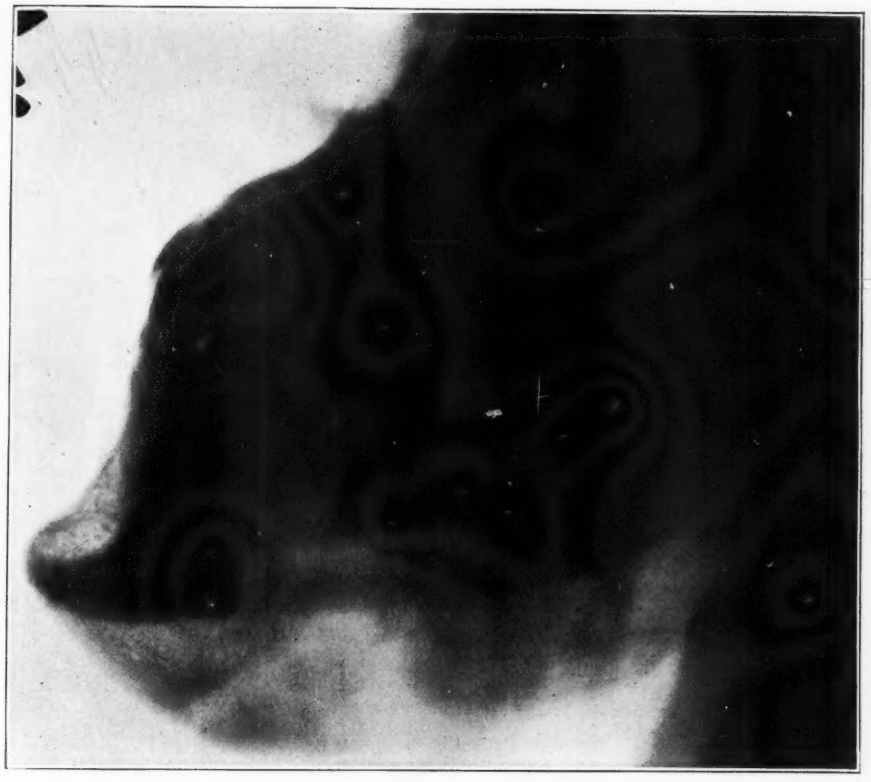

Fig. 6.

Fig. 7.

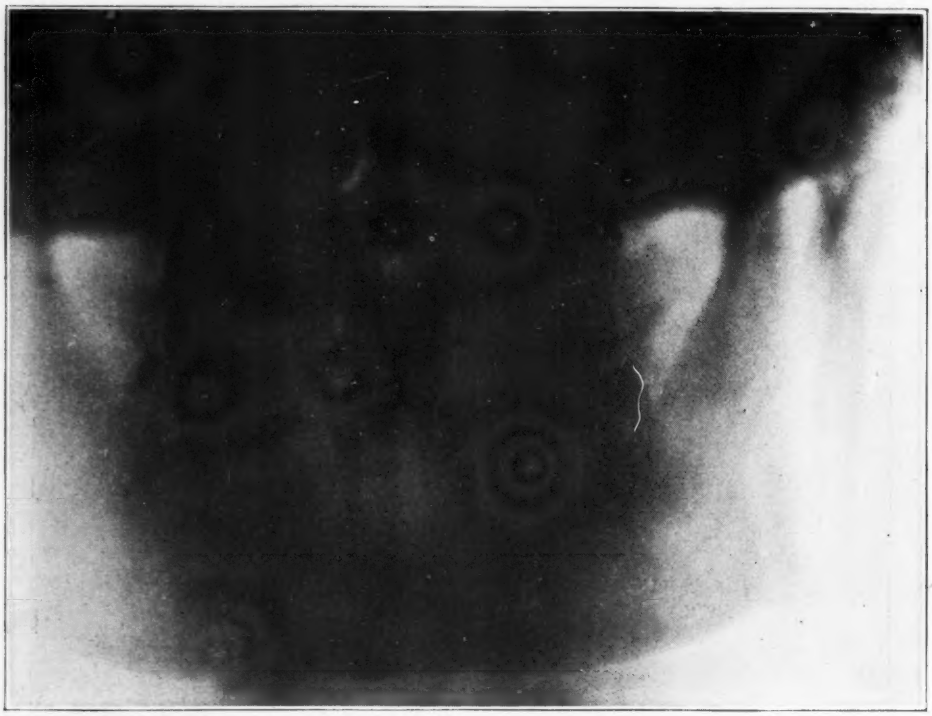

Fig 8.

Fig. 9.

versally. A great deal could be written on the subject of technic in the assemblage of these component parts.

Fig. 4 illustrates a method for the expedition of time without sacrifice of principle in the view of conserving lengthy technic, treating the patient imme-

Fig. 10.

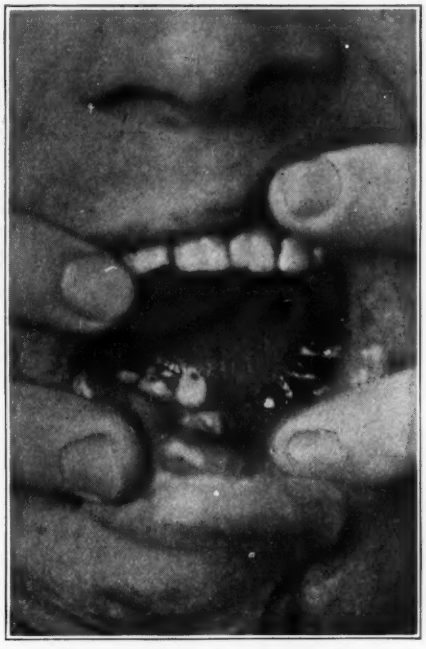

Fig. 11.

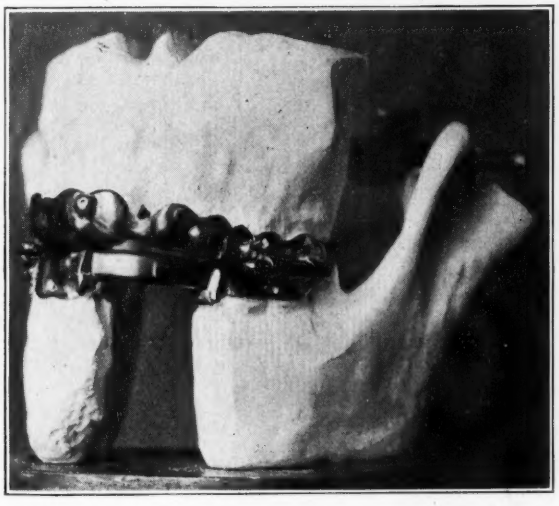

Fig. 12.

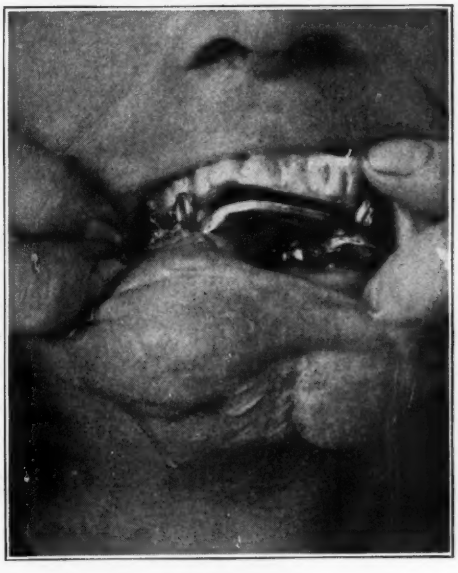

Fig. 13.

diately, or in performing the greatest good to the greatest number. This method embraces the use of an impression tray intraorally united to the teeth by means of modeling compound and connected to the cranial cap made of plaster bandage by means of heavy outer wires and nonelastic ties.

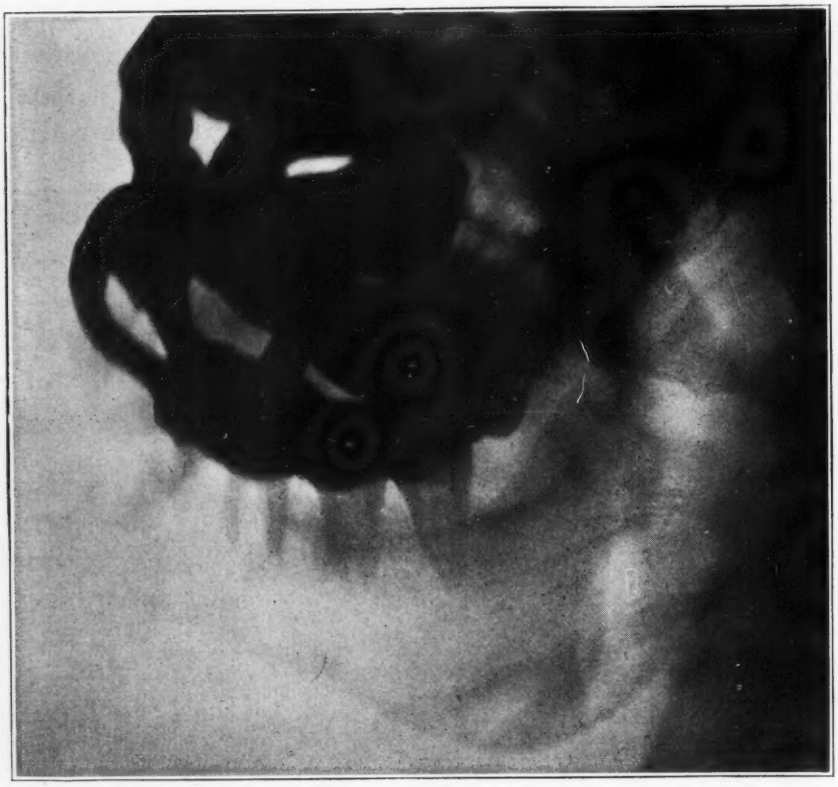

Fig. 14.

Fig. 15.

Fig. 16.

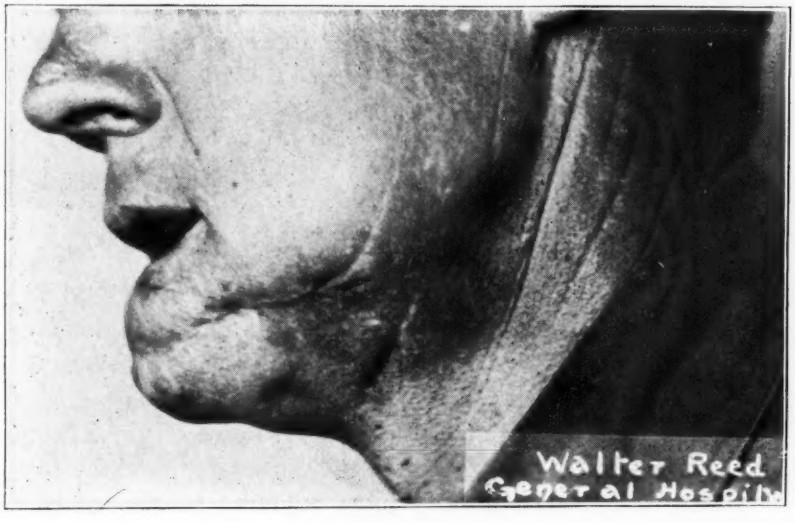

Fig. 17.

Fig. 5 illustrates a multiple fracture of the mandible, but is intended primarily to show the interdepressor fracture through the symphysis.

Figs. 6 and 7 illustrate preelevator fractures through the body and angle of the mandible, respectively.

Fig. 8 illustrates an interelevator fracture through the ramus from the sigmoid notch to the inferior border.

Fig. 18.

Fig. 9 illustrates a postelevator fracture through the neck of the condyle.

Fig. 10 shows loss of substance through interdepressor region.

Fig. 11 illustrates collapse of the lateral sides of the arch by the action of the remaining depressor muscles.

Fig. 12 shows apparatus designed for the above case on the basis of original occlusion. Cast encapping splints made for the upper arch, and the two segments of the lower arch with interdigitating tubes soldered to the upper and lower buccal surfaces through which lock-pins are inserted to immobilize the stumps of

the mandible securely. After cementing these caps to position, the stumps of the mandible were pressed laterally, and a stationary anchorage "lock-bar" was inserted into slots in the forward ends of the lower caps, apparatus designed on the basis of orthodontia.

Fig. 19.

Fig. 20.

Fig. 13 shows apparatus in position.

Fig. 14 is a radiograph illustrating loss of substance through the symphysis, also the "open-bite" splint made in the A. E. F. and worn by the patient during his transportation to America.

Fig. 15 illustrates operation intrapharyngeal, ether-oxygen, curved incision in neck, skin elevated, ends of bone freshened, scar tissue excised, and a panel

Fig. 21.

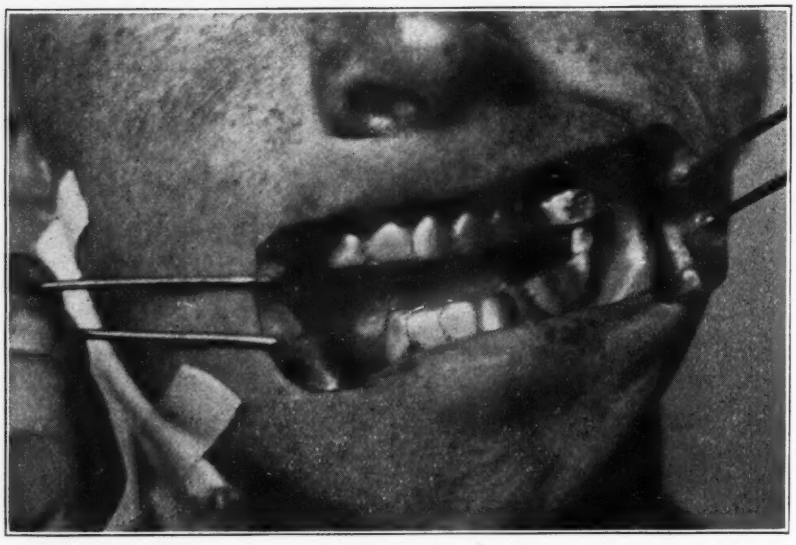

Fig. 22.

of the inferior border cut from one stump and shifted on a pedicle of muscle and fascia, and wired to the opposite stump.

Fig. 16 is a radiograph taken seven months later showing genesis of new bone, solidifying the ends completely. Operation performed by Lt.-Col. Robert H. Ivy.

Fig. 17 illustrates path of missile through interdepressor region.

Fig. 18 illustrates loss of substance through symphysis.

Figs. 19 and 20 illustrate bone graft from the anterior superior spine of

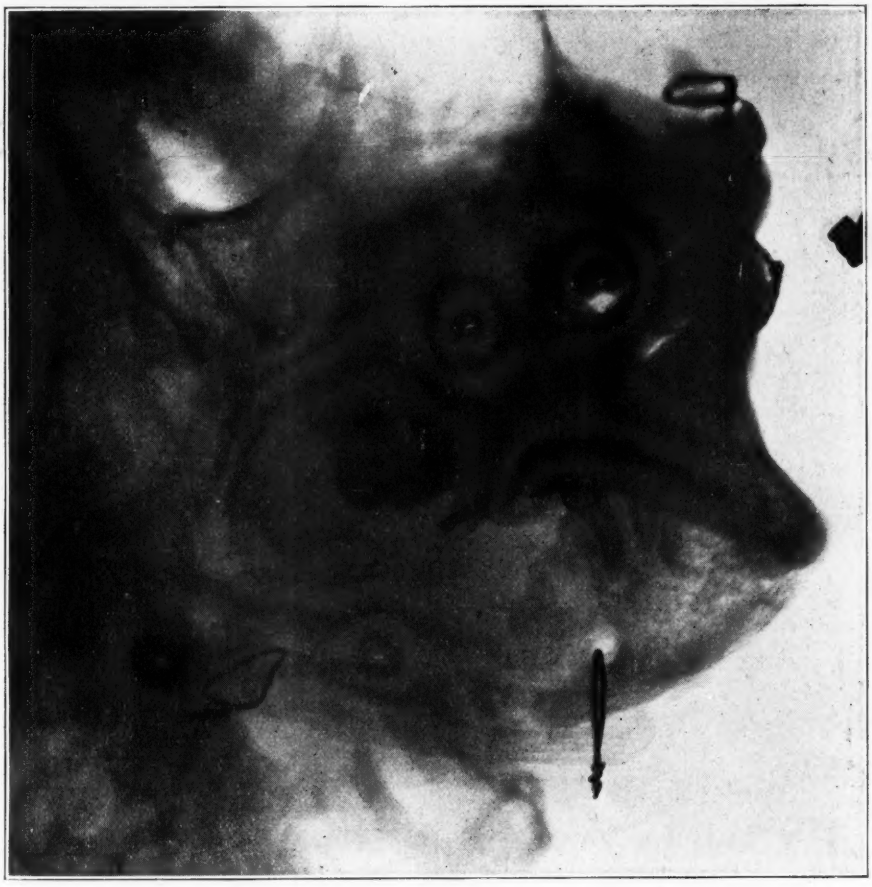

Fig. 23.

the crest of the ilium, also note design of mechanical apparatus based on the orthodontic principles of stability of anchorage and simplicity of design.

Fig. 21 shows point of exit of high explosive fragment through mandible, appearance of sinus before healing.

Fig. 22 shows interdental apparatus illustrating an effective plan of control of occlusion and facial harmony by the prevention of the collapse of the left half of the mandible.

Figs. 23 and 24 represent antero-posterior and lateral views illustrating free rib graft.

Fig. 25 shows models visualizing the operation.

Fig. 26 illustrates loss of substance of mandible in the pre-elevator region with overseas splint in position made by swedging thin upper and lower metal caps reinforced with solder to which were attached hooks pointing upward and downward at correct angular relations. This apparatus was designed on the basis of correct occlusion and by means of attaching intermaxillary elastics afforded

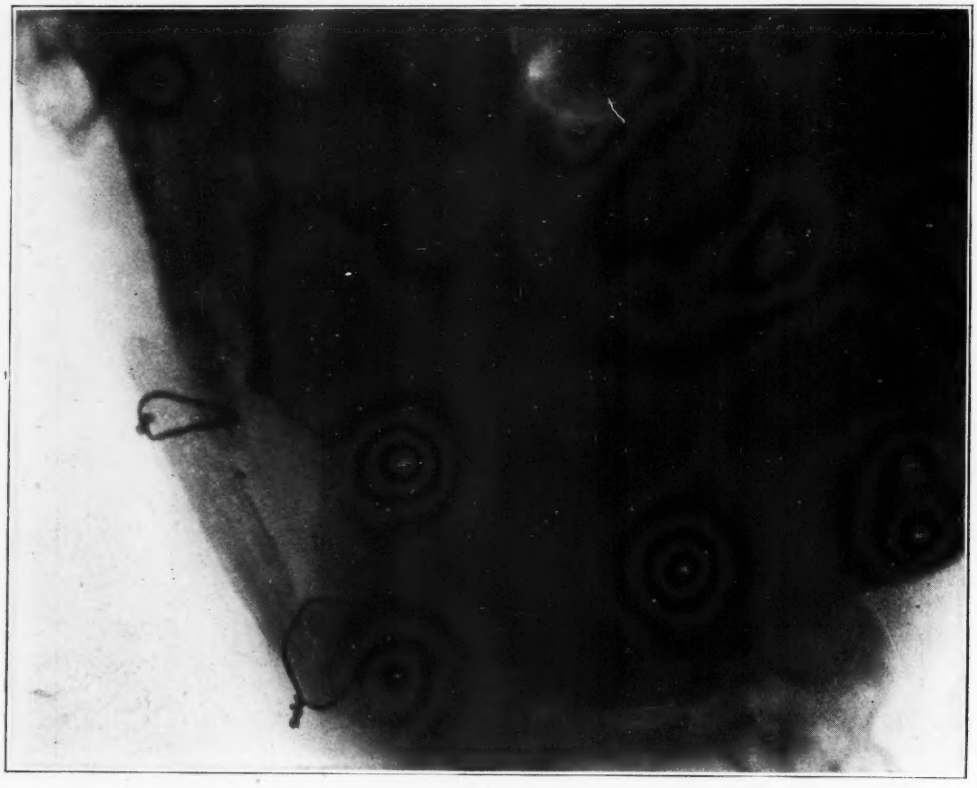

Fig. 24.

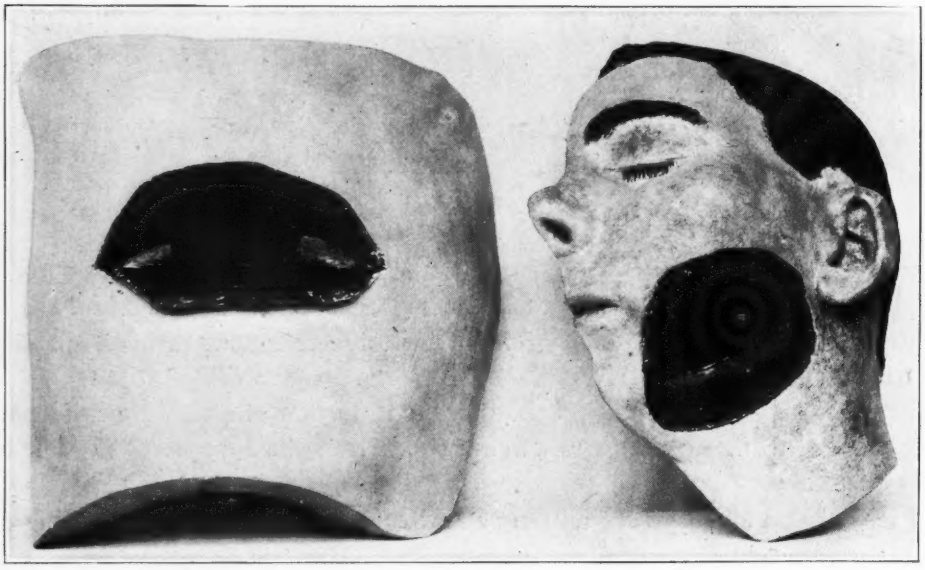

Fig. 25.

a safeguard against liabilities of strangulation, and at the same time the preventive value of its work properly done made the resultant treatment of the case very definite and accomplished in a minimum of time.

Figs. 27 and 28 are photographs of patient. Note the retention of occlusion and facial contour. This apparatus accomplished the fundamental object of an emergency splint in that it placed the teeth and bone fragments in as nearly their

Fig. 26.

Fig. 27.

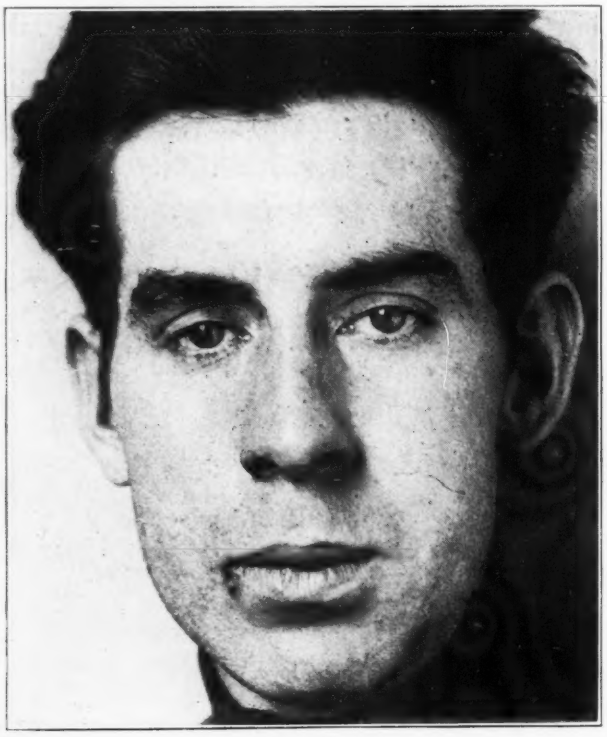

Fig. 28.

Fig. 29.

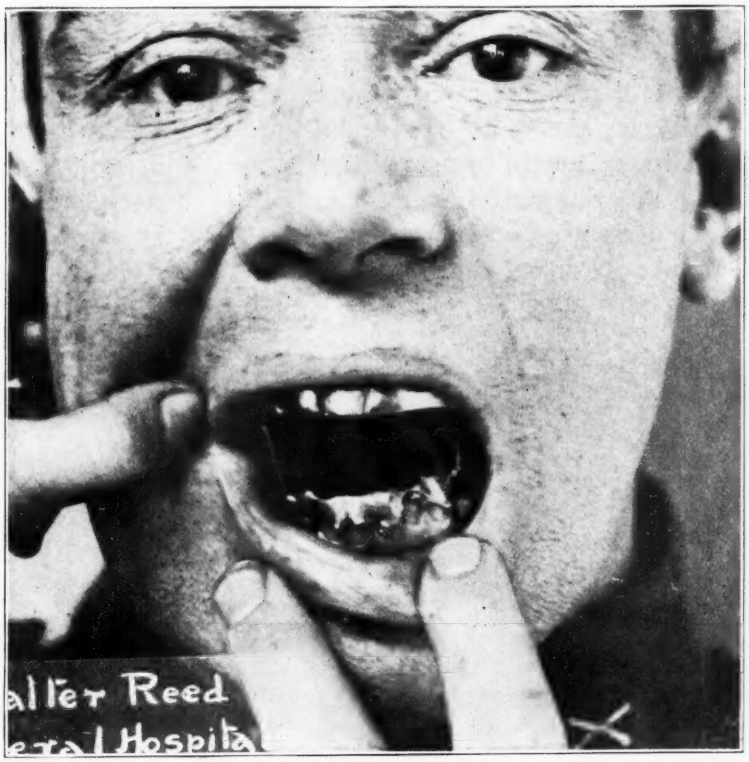

Fig. 30.

Fig. 31.

normal positions as possible and the overlying soft tissues in a normal state of rest.

Fig. 29 is a radiograph of case of the same type as that shown in Fig. 26 (preelevator) showing the "open-bite" splint inserted for transportation to the United States as a safeguard against strangulation. This splint was designed at the sacrifice of all principles of orthodontia in that the elevator and depressor muscles pull the fragments out of position and place the muscles in position which would cause spasm and soreness as well as a decidedly uncomfortable patient. This fracture solidified with the result that instead of the ramus and

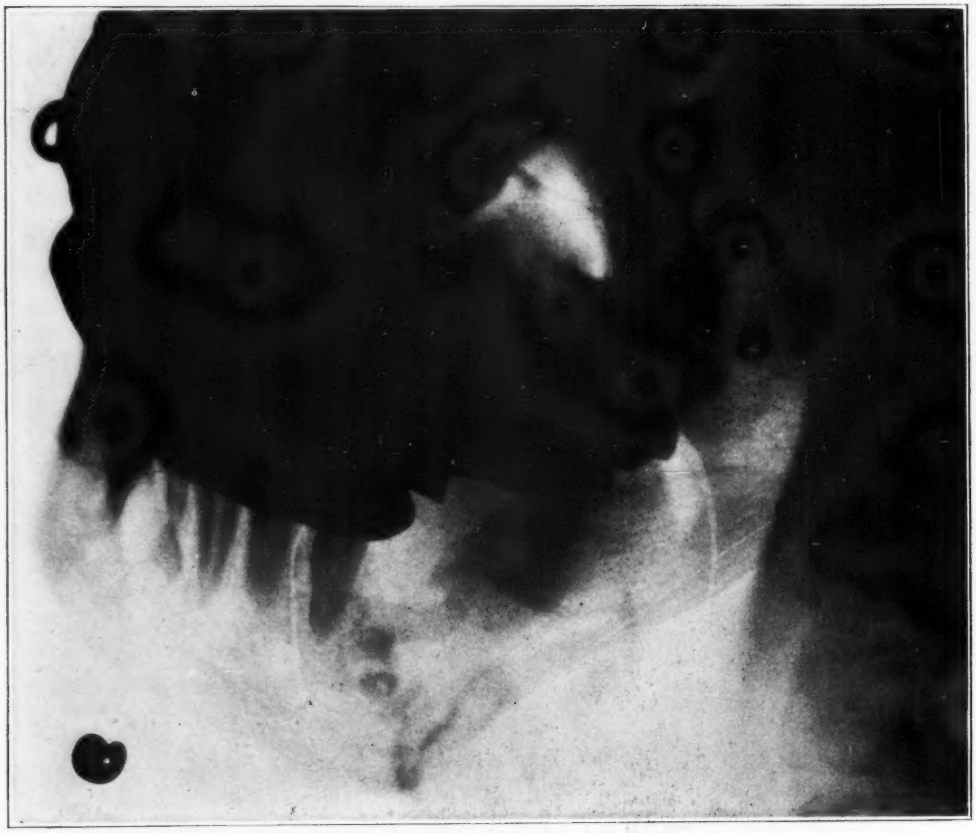

Fig. 32.

body occupying vertical and horizontal positions functioning on the same radius as that of the opposite side, a permanent "open-bite" nonocclusion resulted with the result that an apparatus had to be inserted with reciprocal elastics adjusted to draw the teeth into occlusion. This splint prevented strangulation, but from an orthodontic standpoint it required much follow-up work to overcome its defects.

Fig. 30 shows the appearance of patient having worn the apparatus for ten weeks. Figs. 29 and 30 are inserted as a comparison to draw a distinction between Figs. 26, 27, and 28 with the excellent results from the "closed-bite" method.

Fig. 31, same case as Fig. 27, and illustrates the implantation of three pieces of osteo-periosteum removed from the tibia and planted into pockets between the

periosteal borders of the freshened stumps, one to the lingual, one to the buccal, and one to the inferior border.

Fig. 32 is a radiograph illustrating genesis of new bone four months later.

Fig. 33 is a photograph of model visualizing the operation.

Fig. 34 illustrates point of exit of high explosive fragment, loss of substance pre-elevator region. The action of the elevator muscles elevates the ramus upward and inward with the result that there is formed a deep concavity

Fig. 33.

on the side of the face and the radius between the right head of the condyle and symphysis becomes shortened. On the basis of normal occlusion and facial harmony it is indicated to force the ramus downward and backward with the head of the condyle as a center of rotation. The force to be applied must be directly against the action of the temporal muscle particularly.

Fig. 34 shows the mounted splint illustrating the general principles of simplicity of design for the control of posterior edentulous fragments. The superior arch is used for anchorage and the opposite segment of the lower arch is secured

into normal occlusal relations by means of interdigitating tubes to the buccal surfaces through which a lock-pin is inserted. In order to gain a stationary anchorage, these tubes and lock-pins should be square. A cast silver or vulcanite saddle is made for the external oblique line of the ramus and attached by means of a swivel to a compensating screw which, when tightened, will apply a force

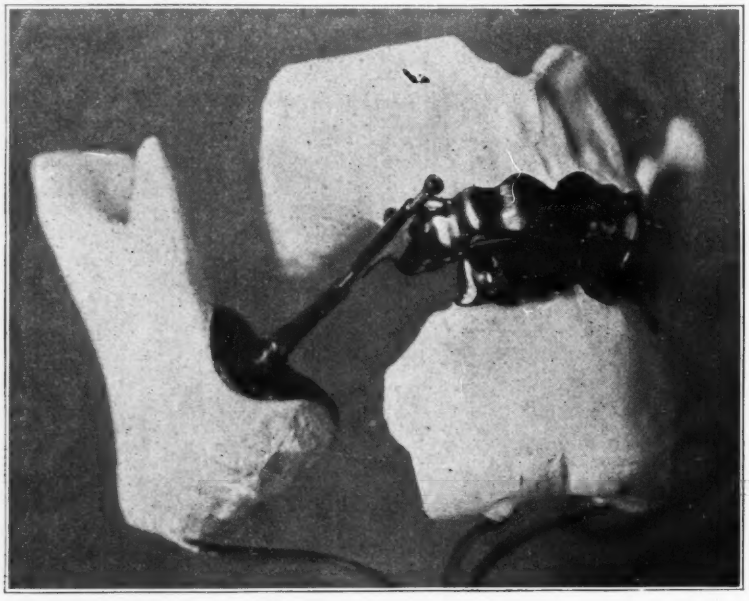

Fig. 34.

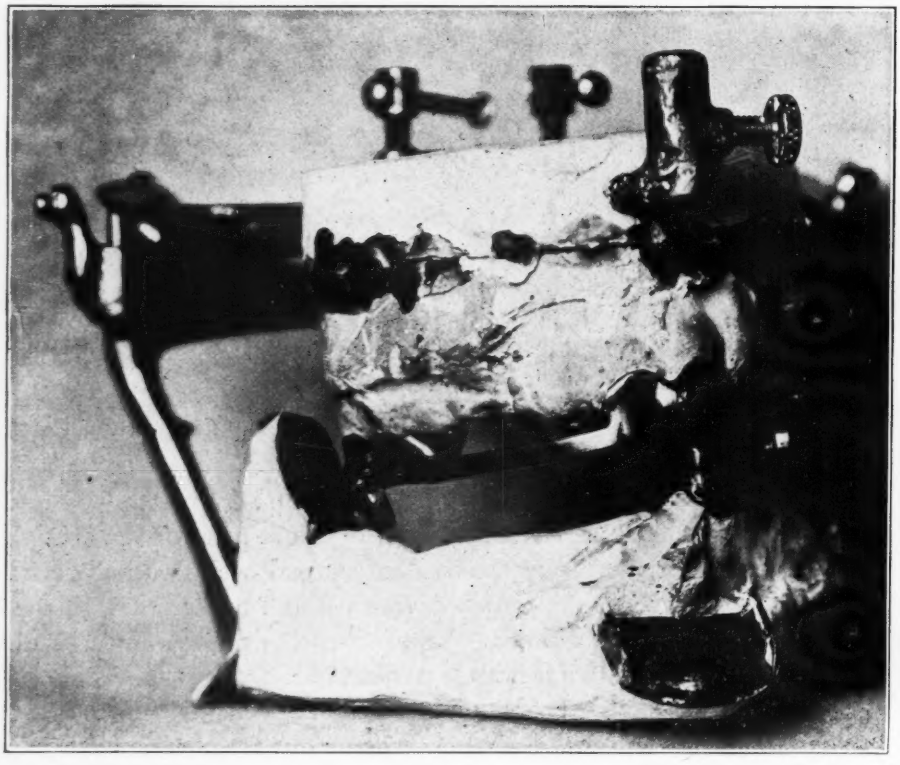

Fig. 35.

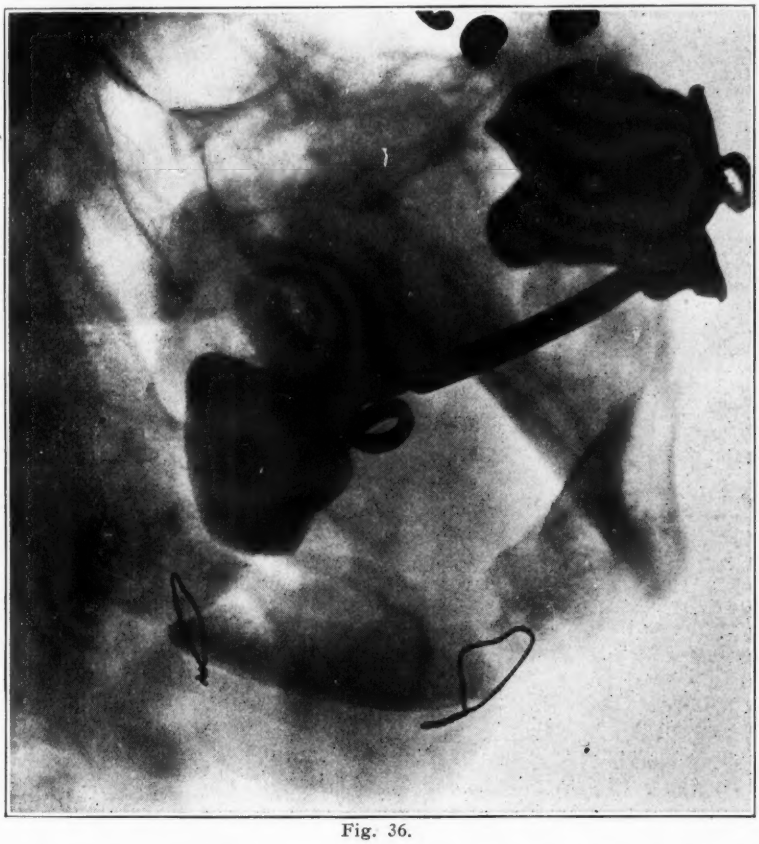

Fig. 36.

Fig. 37.

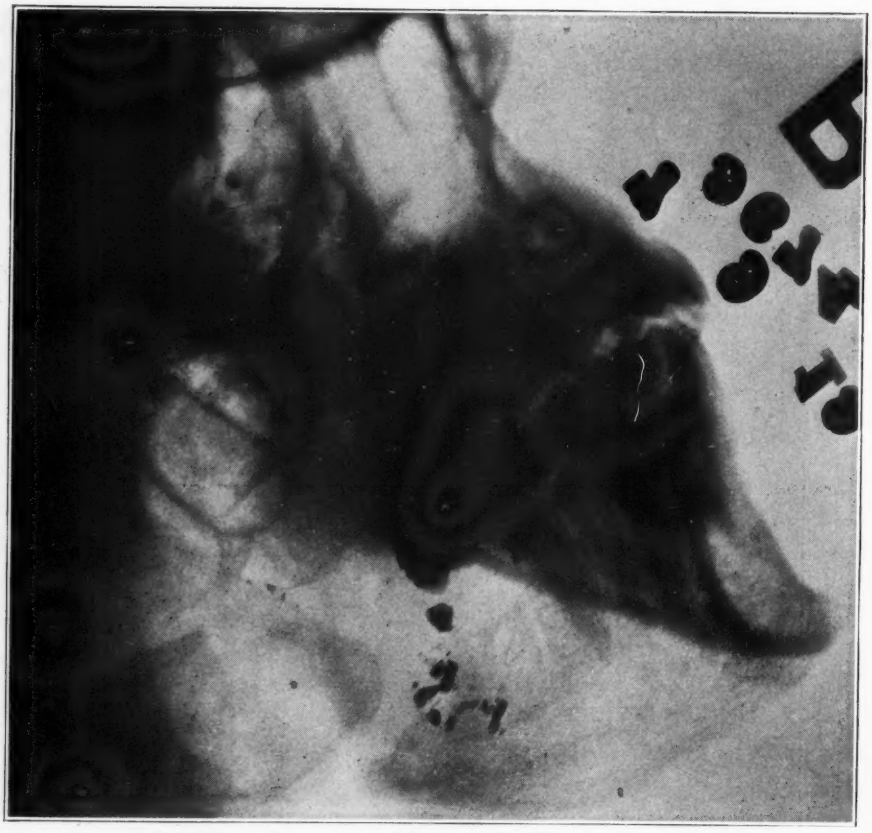

Fig. 38.

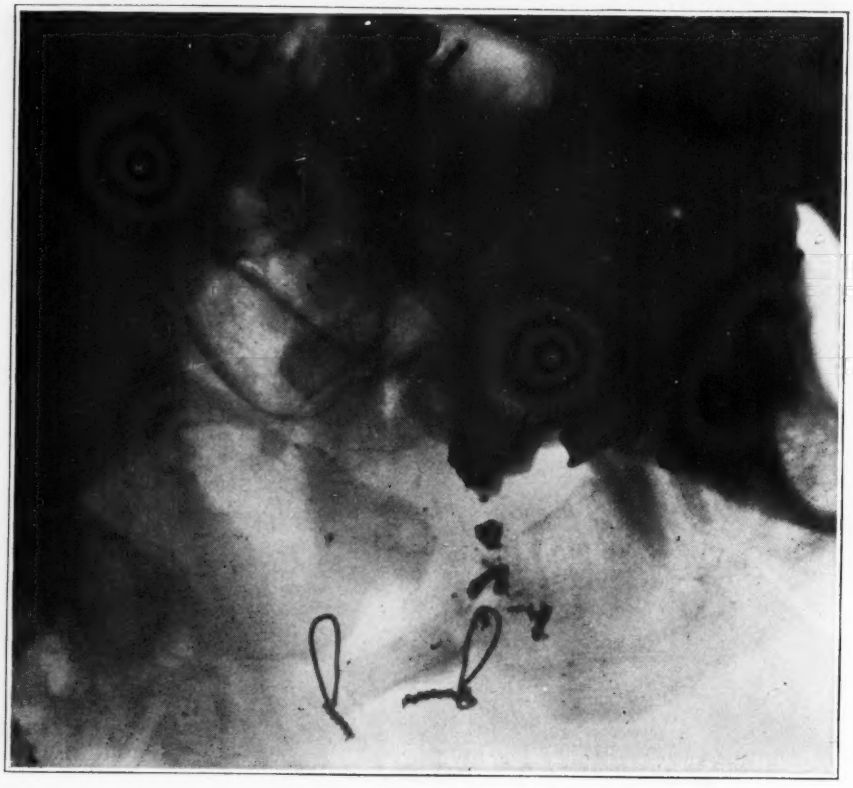

Fig. 39.

at right angles to the external oblique line, and as the ramus is forced backward on the head of the condyle, the swivel attachment will allow the saddle to remain at rest against the soft tissues at all times. This is a very effective method for simple stability, but is very painful and injurious to the soft tissues for traction, therefore, it is better to insert a sharp platinum tip into the bone when extensive movement has to be made.

Fig. 35 illustrates photograph of apparatus on articulated models employed in a case to hold the ramus steadily during operation.

Fig 36, lateral view, shows apparatus in position, also the bone graft inserted from the crest of the ilium.

Fig. 37, photograph visualizing iliac operation.

Fig. 40.

Fig. 38 shows loss of substance in preelevator region.

Fig. 39 shows panel of bone shifted from anterior segment under the stability of intermaxillary wiring.

Fig. 40 illustrates the genesis of new bone and solidification in two months.

Fig. 41, model visualizing operation.

Fig. 42 shows point of exit of high explosive fragment in preelevator region.

Fig. 43, a radiograph illustrating sequestra and loss of substance. It will be noted that there is a vital, well-invested molar in the posterior segment.

Fig. 44 shows occlusal view of the splint disassembled. From the viewpoint of anchorage it will be noted that the cervical borders of this silver triple gold

plated casting is not scalloped, the border being left smooth to protect the cervical gum borders and to fill the interproximal spaces with cement for security of attachment. It will also be noted that interproximal set-screws are provided to be screwed between the teeth while the cement is still soft, these are sometimes essential for the assured security which the seriousness of the operation necessitates. Where there is only one tooth standing alone a cast cap necessarily has to rely upon the cement for security, whereas a band may be attached more securely.

Fig. 45 presents view of splint, right side, illustrating plan of loosening the

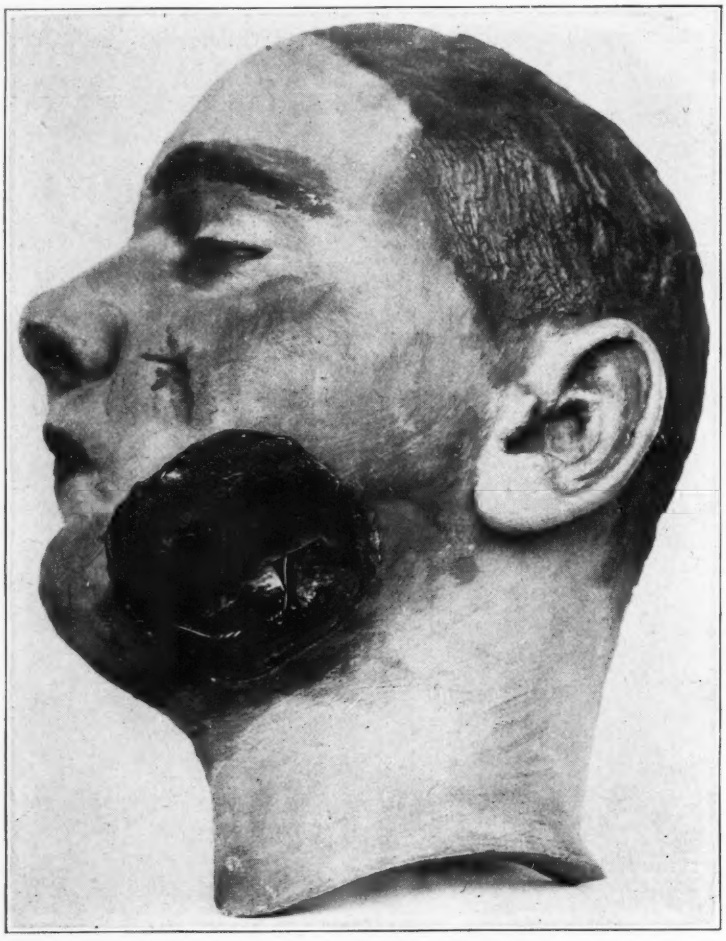

Fig. 41.

nut on the front end of the tube and then by tightening the nut on the posterior end, the ramus is forced backward, thus overcoming the action of the elevator muscles.

Fig. 46 illustrates left view of splint showing the buccal flange designed to control occlusal and facial harmony by preventing the collapse of the left segment. It would have been easily indicated to have inserted a cumbersome interdental splint in this case which would have interfered with the patient's comfort to the extent of becoming serious in the consideration of the success of the operation; therefore, it is believed that this apparatus was orthodontically correct.

Fig. 47 shows operation, intrapharyngeal, ether-oxygen, curved incision in neck, skin elevated, scar tissue excised, ends of bones freshened and the shadows of two pieces of osteoperiosteum from the right tibia may be seen between the stumps.

Fig. 48 is a radiograph made five months later. Note the genesis of new bone in the bed of the graft.

Fig. 49 shows radiograph taken eight months after operation, growth of new bone having solidified the fragments securely in normal occlusion. At this

Fig. 42.

stage it was possible to loosen the posterior fracture band, and by rotating it off of the tooth, the jaw could be tested, and if found loose, the splint could be quickly recemented.

Fig. 50 shows completed case. Operation Lt. Col. Robert H. Ivy.

Fig. 51 shows preelevator loss of substance of mandible from osteosarcoma. Radiograph illustrating an ox bone graft, and it will be noted that absorption is taking place, this is not an autogenous bone and Nature will not tolerate it because it is incompatible with human tissues causing atrophic absorption.

Fig. 52 is a radiograph illustrating loss of substance in interelevator region of the mandible.

Fig. 53 illustrates gliding planes in the buccal sulci between the upper and lower encapping splints designed on the basis of normal occlusion and facial harmony.

Fig. 43.

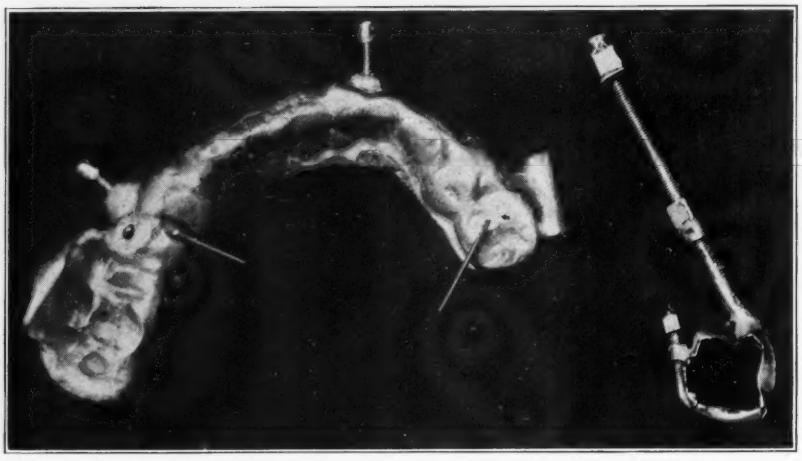

Fig. 44.

Fig. 54 illustrates a section of cortical bone from the tibia inserted into position.

Fig. 55 is a radiograph illustrating region of tibia from whence bone was procured.

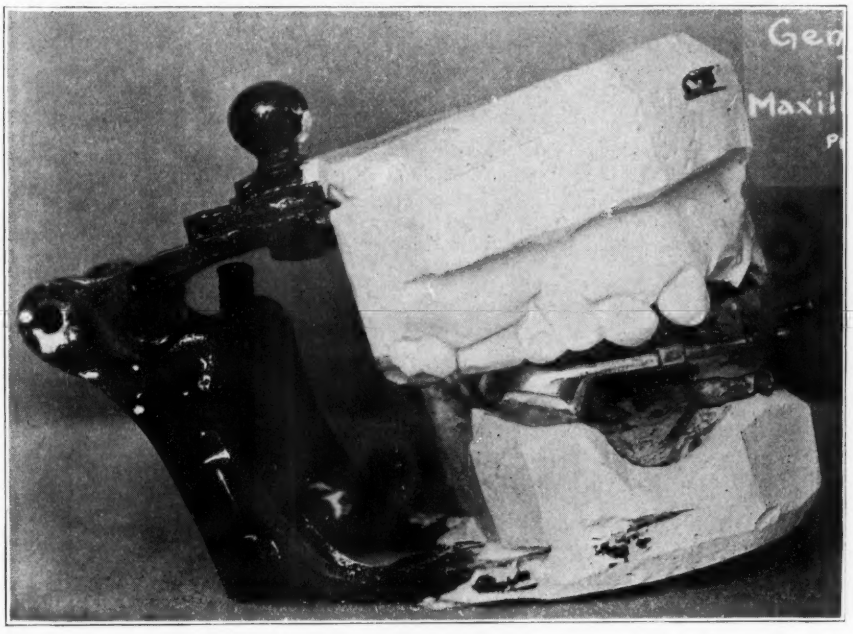

Fig. 45.

Fig. 46.

Fig. 56 shows loss of substance in postelevator region of mandible wherein it will be necessary for patient to wear apparatus seen in the illustration permanently, and as a means of occlusal and facial control.

Fig. 47.

Fig. 48.

Fig. 49.

Fig. 50.

Fig. 51.

Fig. 52.

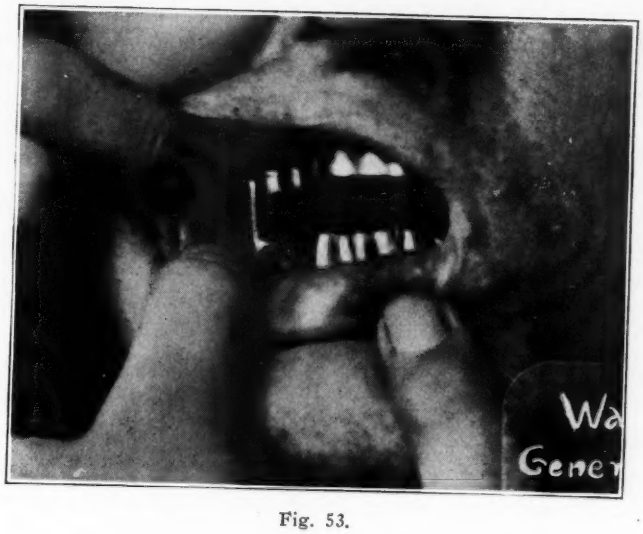

Fig. 53.

The foregoing cases illustrate fractures through the various regions of the mandible, also similar cases of loss of substance throughout the various regions. From the standpoint of classification these fractures were referred to by the French method which was not intended to infer that the other classification suggested will not become equally effective. These cases are shown to illustrate the fact that cast splints are far more effective than swedged splints, and the best material found is 90 per cent silver, and 10 per cent copper. These illustrations are also intended to give you a study of what has been found to be the best designs of casting, all splints must be gold plated. It is not at all infrequent in the final splinting apparatus for equalizing the occlusion and prolonged retention that the usual technic of bands for anchorage may be employed, but in the early

Fig. 54.

stages or where important operations are dependent upon the splints, it is impossible to subserve the best principles of band technic, but it should always be employed when conditions are favorable.

These cases have also been submitted to your consideration for your careful study and food for your thoughts in the great question of bone growth and the value which they may impart to you in comparison with the same subject in the routine pursuits of orthodontia. It has been exceedingly difficult to endeavor to cover such a broad field in my earnest desire to impress upon your minds the great importance of this branch of orthodontia, and while we hope in time to be able to digest the details of this subject more thoroughly for you, it is hoped

that you will consider this effort as being an insight into the principles of the entire field only.

My personal desires and object are to interest you all in this subject wholesomely, and in conclusion, if you will pardon me for indulging in a bit of senti-

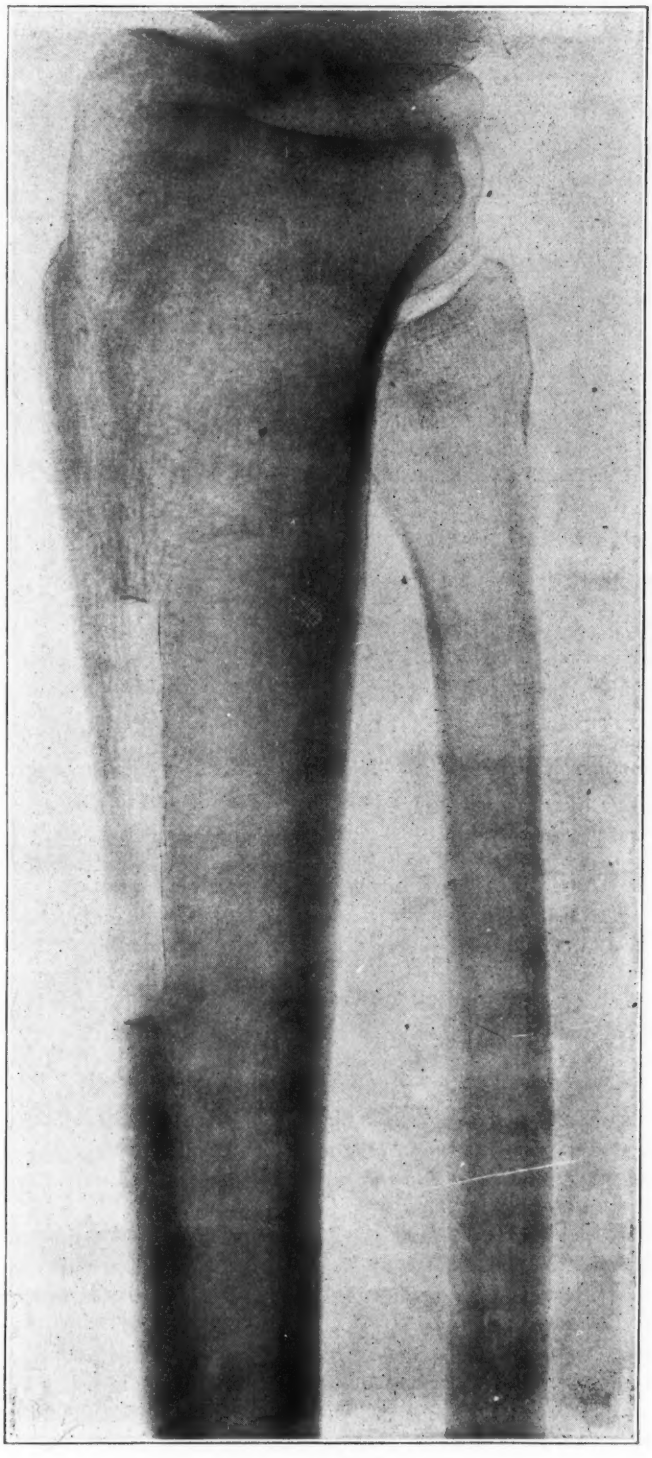

Fig. 55.

ment, I would like to state that I feel that the years which I have spent in orthodontia have been rewarded a hundred fold by the consolation which I have had in serving between three and four hundred patients in this work and the reward which came with successful treatment.

Upon the existence of future emergencies, it is practically assured that the specialists of orthodontia will be given sufficient preference and afforded such

Fig. 56.

splendid opportunities in this service, until it behooves each of you to be prepared, and I wish to further insist upon your very serious consideration of obtaining a commission in our Dental Reserve Corps.

DISCUSSION

Dr. H. L. Hosmer, Detroit, Mich.—It is with a feeling of regret that I open the discussion of this paper. Regret, because I find myself totally unqualified to do justice to such an excellent essay. Realizing more fully than ever before that my experiencs in war surgery was, indeed, nothing in comparison with the work done by Major Eby, I wish to say that we men in the American Expeditionary Force made no attempt to treat the injured who were presented to us in the way the essayist has so magnificently and so clearly shown. They were treated at the Walter Reed General Hospital at Washington, D. C.

The work that has been shown us this afternoon proves beyond the shadow of a doubt the bigness of our profession, and has shown those who in former years have tried to belittle the dental surgeon in the Army by refusing him equal rank with the medical man, that dentistry is a profession second to none, and fully deserves the recognition it now enjoys.

Major Eby's contention that the classification of fractures should be made according to the position they occupy in the bone, I believe, is a most excellent point, rather than the classification by muscular action, as used by the French. By his method one can readily tell the exact location of the fracture.

The essayist has clearly shown us the important place the orthodontist holds in the maxillo-facial injuries. The similarity of the appliances which we use to those employed in the reduction of fractures clearly shows that the orthodontist is a specialist best fitted to treat these kind of war injuries.

If you will but compare pre-war methods for reducing compound comminuted fractures, where there is much loss of bone tissue, with the cases Major Eby has shown, you will readily appreciate how much the world of science owes to the dental profession.

Consider the remarkable results obtained where bone inserts have been necessary. Eighty per cent of these operations have been complete successes, while the majority of the

remaining 20 per cent have only had to be freshened up, but could not be classed as complete successes.

The ingenuity employed in the construction of the different apparatus employed in the work shown us has the orthodontic abilities of Major Eby written all over them. The square tube and pin locking device employed in several of the cases is the most effective method I have ever seen, and much credit is due to the essayist for finding so simple and yet so efficient a means of locking the jaws together.

There is little that I can add to what the Major has so ably covered, but I feel I should not let the opportunity pass without some comment on the unselfishness of my good friend Eby. The war has been over now almost a year and a half, and we men who were in it have long since returned to our practices, feeling that we have done all that was required of us, with little thought of the poor fellows who were less fortunate than we. These men must go through life with the horrible and unsightly injuries they received in the defense of their country's honor. Fortunately for them, there were a few men, such as Major Eby, who were big enough, unselfish enough, and patriotic enough to see this work through, willing to carry on at a great financial sacrifice, and with no reward, except the gratitude of those unfortunate men whom they have so conscientiously and untiringly endeavored to reconstruct so that they may once more be presentable to society.

Dr. Woodbury.—It was my privilege to do constructive work along the line Major Eby has given us, and I am sure it has been a great privilege to have listened to him, because I have had the opportunity of removing a large number of appliances that have been made. It seems to me it is almost a new departure of dental surgery, in a little different sense than we see, developed by men like Major Eby and others. I think we are to be congratulated on having had this wonderful opportunity of listening to Major Eby and of seeing the illustrations.

Dr. D. S. Sterrett, Erie, Pa.—I have nothing to offer but a feeling of great gratitude to Major Eby, to Colonel Ivy, and other men who have been instrumental in intelligently and unselfishly taking care of and finishing up these men. I recognized some of them on the screen. I recognize now the small part some of us played in reconstruction work on these men.

The methods which were employed were limited to two things, one the material which we had to work with; another I think was inspiration. Whatever training a man may have had previously in caring for these cases, we acted comparatively involuntarily in the way we handled them. Some of these men came across in good shape. They were easy to work on, largely the result of the two factors I have mentioned, and not to any particular sagacity or knowledge or experience on our part. Where the men had the wrong thing done to them, it was borne with fortitude, and it makes me all the more appreciative of the work of the men who took them apart and fixed them up right.

Dr. Asa A. Lagrow, Oak Park, Ill.—I have not had any experience along the line Major Eby has described in the Walter Reed Hospital. I fully appreciate the great value of the work he has done for the boys in taking care of them and in making life worth while for them afterward. His great amount of scientific knowledge and the data that he is compiling will be invaluable to us in years to come. It will be of great importance to us, more especially because the knowledge they have gained could have been gained perhaps in no other way. I am sure it is through the unselfish and untiring efforts of men like Major Eby that these records are being compiled.

Dr. H. G. Metz, Pittsburgh, Pa.—It is gratifying to me to see the results that have been obtained by men like Major Eby and his associates. Any one who saw these cases in the field and in base hospitals can appreciate what this work is. The limited supplies we had and the conditions under which we had to handle these cases, left a deep regret in our hearts that we could not do more for them. We were limited as to the time we could keep these cases, but certainly it makes me feel good to see the things which these men did and the results that were accomplished. It takes a great load off our minds to see these results, and if we could only see equally good results in the cases of other men we would feel much better.

Dr. William C. Fisher, New York City.—I was in charge of one of the largest hospitals in this country, and we had passed through that hospital thousands of wounded men coming back from abroad. We had a large percentage of these maxillo-facial cases. I had the good fortune to observe the work of nearly every prominent man or corps of men on the other side, men like Hume and many others, and I also had the great pleasure of seeing Major Eby's work, and I am sure he does not have to take second place to any of them. (Applause.) You can add to that the almost perfect work of Kazanjian, the perfect work of Hume; and the work of this man is just as perfect and possibly a little more so because he has stuck to it a little longer.

I had the pleasure a few weeks ago of seeing one of Major Eby's cases in my office, and really the reconstruction work on that man was the most beautiful thing I have ever seen. He was a tall handsome fellow, and his facial deformity was so slight that you would hardly notice it until he turned his face to you and you got a full view. That young man has been restored and has become so interested in the work of assisting Major Eby in making appliances for the other men, he has become almost an expert mechanical man, and will begin the study of dentistry under the guide of the government this coming year, all simply through the inspiration of this man Eby. (Applause.)

Dr. F. C. Rodgers, St. Louis, Mo.—I wish to express my feelings of admiration for what Major Eby has done and is doing. We have heard a great deal about war heroes, but very seldom do we hear mentioned the heroes of peace. Dr. Eby embodies both. He is a war hero because he gave up everything that life possesses to enter the army during the war, and now that the war is over he has given up everything that is dear to life to remain in the service to finish the noble work which inspired him to take it on during the stress and excitement of the war. He has erected a monument which will be lasting for the dental profession, and orthodontia in particular, and I feel we should try everything in our power to recognize and honor such a man and show our gratitude for the service he has rendered to humanity and to the profession. If there is any one individual that deserves a Distinguished Service Cross or a Distinguished Medal for the work he has done, Dr. Eby is entitled to all the honors that can be conferred upon him by the United States government. (Applause.)

Major Eby (closing the discussion).—Gentlemen, I am absolutely unable to make anything like a reasonable reply, except to express my feeling of gratitude and appreciation of your kind expressions which are deep in my heart.

It would be utterly remiss at this time if I did not myself pay tribute to the work of the men overseas, realizing the various handicaps they had to overcome and the tremendous determination that soldiers displayed.

I wish to thank those of you who have had so many kind things to say in this discussion and for your expression of good will.

So far as any reward is concerned, I have not expected any reward. I do not want it. All I ask is the good will of the patients and your good will. What I may have done has been done all the while in the interest of orthodontia and our profession. The only way I can return the honor conferred upon me is to dedicate it to the Dewey Alumni Society. (Applause.)

PRESIDENT'S ADDRESS BEFORE THE AMERICAN SOCIETY OF ORTHODONTISTS, CHICAGO, ILL., APRIL 4-6, 1920

By John V. Mershon, D.D.S., Philadelphia, Pa.

IT IS with a feeling of deep appreciation that I accept the honor you have conferred upon me by selecting me as President of The American Society of Orthodontists, and I extend to the members and our guests a most cordial welcome.

Our objects in attending these meetings are many; first, and by no means the least important, that we may meet old friends and renew our friendship with those we have learned to love, and receive that inspiration which comes to men's souls from contact with the high type of manhood with which this society is so richly blessed.

We come here that others may help to solve our problems for us, and that, perchance, we may help to solve the problems of some of our fellow members. Our problems are many. We are here not only to solve our own problems, but the entire dental world is looking to this organization to solve the orthodontic problems and to direct and teach them, and this is a responsibility that we must assume. We must remember that we, as specialists, are only practitioners in a special department, and that our patients are in the hands of the general dentist before they come to us.

The Relation of Focal Infections to Modern Orthodontic Problems

This organization must direct the general practitioner as well as the undergraduate student in the problems of pre-orthodontic treatment. In the past the orthodontists have impressed upon the dental profession the necessity of saving and restoring all teeth to their original size and contour, especially the first molars and all deciduous teeth. The development of the last few years has impressed upon the profession as well as the laity that certain diseases and organic lesions have their origin at the apices of infected teeth and these conditions have presented several new problems to the orthodontist.

In the case of first permanent molar teeth in which the pulps are dead and infected prior to the eruption of the second molars, the orthodontist from the standpoint of occlusion and development would recommend them to be filled, but with the possibility of infection from these teeth another problem is presented, and from the standpoint of the pathologist these teeth should be extracted. If extraction is the final decision, at what period in relation to the eruption of the second molar should the extraction be done? and what is the correct procedure to adopt in the orthodontic treatment of these cases?

The attitude of the orthodontist in the past regarding the deciduous teeth has been very much the same as with the permanent molars, namely that we must fill all nonvital deciduous teeth; that no matter how badly broken down these teeth may be, they should be restored to their original size, shape, and contour. This would be permissible if we were studying the problem of ortho-

dontia purely from the standpoint of occlusion, but our problem is one of functional development, and anything that interferes with the development of the child is a causative factor in malocclusion.

Infections are one of the most common causes of organic disturbance which have a retarding influence upon the growth and development of children. A deciduous tooth with infected roots is most difficult to treat and fill so that we can be assured that the possibility of infection and the constitutional disturbances resulting therefrom have been eliminated, and from this standpoint it has been my practice and advice to have all deciduous teeth with nonvital pulps removed. I should like to have this subject discussed at this meeting, as this organization is very largely responsible for the efforts of the general practitioner, and sometimes against his better judgment, to save all first molars indefinitely, and to retain all deciduous teeth until time for the eruption of the teeth of the permanent series irrespective of apical conditions.

PREPARATION FOR THE PRACTICE OF OUR SPECIALTY

Years of experience in general practice and in the specialty of orthodontia have impressed me with the necessity of the undergraduate student receiving a thorough comprehension of the orthodontic problem so that when he continues his work in special schools these institutions can devote their attention to teaching real postgraduate subjects and clinical work, rather than having to teach subjects which should have been taught in the undergraduate institution. I disapprove of dentists specializing in orthodontia as soon as they graduate from the dental college and before they have had any experience in dealing with the large variety of conditions which may exist in the oral cavity, and which one never has the opportunity of observing and studying in the practice of orthodontia, unless the postgraduate school includes in its work one or two years of practical work in a dental infirmary. In orthodontia we see only children and those children that are defective in their development; we have no opportunity of knowing what possible conditions may arise in the mouth through the rest of the life history of the individual, and that is most essential. If a man has had a number of years' experience in the general practice of dentistry, he has seen the masticatory organ in all of its different phases of development, under all conditions and circumstances. He has seen what a child of six will be at ten, what a child of ten will be at fourteen, and what one of fourteen will be at twenty-five; and he has had a better opportunity to study the function of the masticatory apparatus. The orthodontist sees the dentures when they are at their best and when we dismiss them they are only just started upon their life's journey.

ORTHODONTIA INSEPARABLY RELATED TO DENTISTRY

The opinion seems to prevail that orthodontia is something different, apart, separate and distinct from dentistry. Orthodontia is just as much a part of dentistry as dentistry is a part of medicine, or as surgery is a part of medicine; they are all a part of the healing art and can not be dealt with separately any more than we can separate the various organs of man and have him persist. The orthodontist should keep in touch with the progress and changes in general

dentistry, and to that end he should be just as constant in his attendance at dental society meetings as the men in general practice.

I have so frequently heard it expressed, and it seems to be a prevalent opinion, that one can attend a post-graduate school of orthodontia and in a comparatively short time become a proficient orthodontist. I want to disabuse the minds of the men who are anticipating going into orthodontia of this impression; it can not be done. If there is so little in the orthodontic problem that a student who has just graduated from a dental college without any experience can in a few weeks become qualified to do the work satisfactorily, then orthodontia should not be considered a specialty. If this were true, the undergraduate schools could by giving a selected course qualify men for the practice of orthodontia as well as the postgraduate schools. While I am quite willing to admit that the majority of the men who belong to this organization did not have a very long course of instruction, I think the majority of them who have had a long experience will admit that their instruction was very inadequate. I do not wish to minimize the work done by some of the postgraduate schools, but the study of orthodontia involves all the problems of life, growth, and development, as it is modified by heredity and environment and requires an enormous amount of study and an extensive practical experience to practice it successfully, and this can not be acquired in a few weeks.

OUR PROGRAM

I want to express my appreciation of the splendid work done by the Board of Censors. They have prepared for this meeting a most excellent program of papers, reports of cases, and clinics. The amount of labor entailed in preparation for a meeting of this kind, making all arrangements for the program and for all other details of the meeting can only be appreciated by those who have had similar experience. I sometimes feel that those who have nothing to do but sit and enjoy the benefits from such a program seldom realize how much they owe the Board of Censors. Every member of this organization should feel that it is his duty to cooperate for the betterment and the upbuilding of the society. We sometimes thoughtlessly criticize when certain features of a meeting do not come up to our expectations, forgetting that when we offer a criticism we should suggest the remedy.

DEATH OF DR. LAW

The members of the American Society of Orthodontists mourn the loss of our fellow member, Dr. William G. Law, who by his sterling character had endeared himself to all of us.

I extend to the officers and the Board of Censors for the coming year my best wishes and assurances of my loyal support.

DISCUSSION

Dr. J. Lowe Young, New York City.—Unfortunately neither of the gentlemen who were put down to formally open the discussion on Dr. Mershon's address are present. Therefore, I will ask Dr. Pullen if he will be good enough to open the discussion for us.

Dr. H. A. Pullen, Buffalo, N. Y.—Mr. Chairman, Members of the Society: I am afraid I am not well qualified on such short notice to discuss so many important subjects as were brought up by our president. While he was reading I was thinking of a paper by Dr. Young, which he read not long ago, and which was called "The Permanent Filling of the Temporary Teeth." I did not hear the paper but am sure it must have been a splendid one, and along the line in which we are all interested. I have no doubt it dealt with the very conditions we have to deal with every day where we find the deciduous teeth going all to pieces because the dentist lets them go to pieces. By the permanent filling of these temporary teeth they are prepared for the dental arches that are to follow. I hope Dr. Young will tell us something about what he had to say in that paper.

After teaching in a postgraduate school, I am fully convinced that a short-term school does not give enough practical or enough theoretical work to enable any one to start out as he ought to. I think a year's course, at least, should be given to a man who is looking for a course in orthodontia. The president said that many of our members had received only a short-term course in orthodontia. It is true that was all we had to begin with, but many of us have been working in a postgraduate course for twenty or twenty-five years, or more, and do not feel that we have graduated yet. If it takes that long to feel that you are really getting started, surely they should have at least a year to give them a little start on their feet.

I feel, as I am sure we all do, the loss of Dr. Law and the other members who have died during the past year, and I am sure it is a very great loss to the American Society of Orthodontists. Dr. Law had planned to have an academy of orthodontia in New York City, and with him at the head of it I am sure it would have been a very good school. We have sustained a very great loss in the death of Dr. Law for that reason, if for no other, and we all know that he was a very lovable man in every respect.

I am sorry that on such short notice I can not give you any better discussion.

Dr. B. E. Lischer, St. Louis, Mo.—I do not feel qualified to discuss this very excellent address on a moment's notice, but the president has brought up the subject of dental education and hence I consent to make a few remarks.

At the annual meeting of the Association of Dental Faculties of American Universities, held in Detroit, in January, I had the honor of presenting a "Syllabus of a Course in Orthodontics for Undergraduates." I found this association is preparing a syllabus for every subject in the dental curriculum, and that the entire work is to be published. Since then, Drs. Mershon and Johnson have been asked to serve with me in the final preparation of the course on orthodontics. I believe that the publication of such a syllabus is a step in the right direction, and I sincerely hope that this society will lend its assistance in a matter so important.

I believe that we should continue our committee on education and I would suggest that it cooperate with the association to which I referred. The dental faculties of our universities are wide awake to the fact that they must not only provide undergraduate instruction in orthodontics, but advanced training for those who would specialize. They realize that the training of the orthodontist is a question which can not be evaded much longer, that the specialist, as well as the public, suffers immeasurably by the continuance of his training in private schools, where "short cut" courses, based on the ideal of the mechanician, often predominate.

I recall now that in my presidential address before this society at our meeting in Chicago, June, 1913, I made similar reference to the subject of orthodontic education, and I am happy to note that events are shaping themselves in complete conformity with the ideals to which I then gave utterance.

Dr. V. E. Barnes, Cleveland, Ohio.—We have listened to the brief and beautiful address of our president, which was so to the point, and to me it was all commendable. I want to add just two things that I have jotted down in commendation.

Our orthodontic treatment should begin only after we are reasonably certain that all the teeth are free from infection. Believing this for more than ten years, I have insisted that all teeth that could not be treated and made free from infection should be extracted. I have especially insisted upon this action in regard to the temporary teeth. The prema-

ture loss of temporary teeth does not cause anywhere near the amount of malocclusion credited to it. The real cause is underlying and the loss of the temporary teeth only aggravates or changes the form of malocclusion. The real loss following premature extraction of temporary teeth is loss of mastication surface, and the loss of some of our anchorage which we should like to use to mold bone so that permanent teeth may erupt to better positions.

I wish to commend the stand against dentists just out of college specializing immediately as orthodontists.

Dr. John V. Mershon, Philadelphia, (closing).—I can only add, in closing, that I appreciate the very kind and complimentary way in which my very brief address has been received. I have said in the address all that I had to say, and I thank you very much.

DEPARTMENT OF
ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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COMPLEX COMPOSITE ODONTOMES—REPORT OF A CASE

By M. N. Federspiel, D.D.S., M.D., F.A.C.S.

Professor of Oral Surgery, Dental School, Marquette University, Milwaukee, Wisconsin

COMPLEX composite odontomes may be defined as calcified tooth tumors, their substance a conglomeration of enamel, dentine, and cementum. These tumors are the outcome of misplaced embryonic cells, permitting a perversion in growth of a part or the whole of a tooth germ or germs.

These tumors vary in size from that of a pea to a mass the size of a hen's egg. The surface is usually rough in character with deeply pitted areas.

Complex composite odontomes are usually found in the molar region. During growth they usually give no sign of any abnormal condition until they encroach upon nearby tissue, producing a sensation of fullness, tenderness, and radiating pain. On account of their growth being extremely slow, it may be years until the tumor is recognized. Occasionally this form of tumor makes its appearance through the gum tissue similar to an erupting tooth. If this happens, infection may invade the area surrounding the mass and develop a well-defined fistula. In time the tumor may loosen and drop out or be shelled out of its diseased bed.

A striking example of such a condition is best illustrated in the following case:

Patient, Albert H., age ten years, school boy, American born, white, and weight 70 pounds.

Complaint.—Pus oozing from palatal surface of upper left second bicuspid.

History.—On December 24, 1917, upper left deciduous tooth was extracted. One month later patient began to complain of pain in the region of left antrum. The jaw began to swell in region of upper left first molar. This was lanced by his dentist, but pain continued sufficiently to confine patient to bed for two weeks. Pus began to flow from a fistula which developed at the area where the tissue was lanced. This condition continued until April, when he was referred

to me. The condition of his mouth as to cleanliness was fair. There was a slight gingivo-pericementitis on the lingual surface of lower left first molar. $\frac{6,5,2,1 \mid 1,2}{6,2,1 \mid 1,2,4,5,6}$ erupted and in normal occlusion. The deciduous teeth remaining were $\frac{d,c \mid c}{d,c \mid c}$. The upper left jaw revealed a large mass 2 inches long and 2 inches wide, the mucous membrane covering the area was congested, the center

Fig. 1.

of which had sloughed, exposing a bony mass about the size of a five cent coin. There were no evidences of the eruption of $\underline{5,6}$. His tonsils were enlarged and showed diseased crypts. The nasal channels were normal.

The x-ray revealed a large mass extending in the antrum, see Fig. 1.

Probable Diagnosis.—Odontoma.

Patient was referred to hospital for operation.

Under ether anesthesia an incision was made over the mass about two inches

long. The mucoperiosteal flap was dissected free from its bony attachment. The outer bone plate, which was found to be somewhat diseased, was removed. The tumor was then shelled out of its bed (Fig. 2). The cavity was found to be diseased and foul smelling. The wound was swabbed with iodine and packed with iodoform gauze. Patient was put to bed in good condition.

Fig. 2.—A complex composite odontoma showing first permanent molar buried in tumor mass.

The packing was removed on the third day and after that the cavity was irrigated with boracic acid solution. On the eighth day the patient was discharged. He returned three months later for observation and the cavity was found to be closed.

MANDIBULAR BONE GRAFTS*

By C. W. Waldron, Major C.A.M.C., and E. F. Risdon, Captain C.A.M.C.

BONE transplantation in so far as the lower jaw is concerned is a surgical procedure of long standing, yet when one looks back upon the relative infrequency of this operation in civil practice, one realizes the unexampled opportunities afforded us by the large number of cases of war injuries of the mandible. During the past three years the surgeons doing this work have made a careful and uninterrupted study of all the various phases of the problems arising in cases of severe fractures of the lower jaw. Within a few days of being wounded most of these cases have come to a special jaw injury centre for treatment. We are all aware of the excellent results obtained by this policy of segregation, for the large percentage of cases attaining bony union and good function testify to the skillful splint treatment rendered by the dental surgeons specializing in this work. In those cases in which x-ray and clinical examinations would seem to show such an extensive bony loss that union could not reasonably be expected, we are strongly of the opinion that continued surgical supervision and close cooperation with the dental surgeon are of prime importance.

EARLY TREATMENT

Though not strictly within the scope of this paper, we feel that some of the more important points should be considered. In the early stages, persistent efforts should be made to keep the mouth as clean as possible by frequent mouthwashes and irrigation of pockets and sinuses. We are convinced that too much stress can not be laid upon the evil effects of curetting the fragments. Our policy has been to encourage free drainage of the sinuses present without disturbing the comminuted fragments, removing sequestra from time to time as they are found to be separated. The increasing number of very severely comminuted fractures resulting in bony union confirms our belief in the merits of such conservative treatment. Displacements of the fragments should be corrected by dental splints as early as possible and when there is a remote possibility of union taking place it is advisable to secure additional immobilization by the construction of a dental splint for the upper jaw, to which the splinted lower jaw, in correct occlusion, may be fixed, by means of an interlocking device. The prevention of displacement and the control of edentulous posterior fragments are of great importance in the early stages and in many cases may be most difficult. The usual methods employed are posterior extensions from the lower or the upper splints. Other methods of which we have had no experience, are the malar-coronoid screw fixation, described by Major H. P. Pickerill, N.Z.M.C., and that of Bruhn and Lindemann, who, by an external operation, expose the posterior fragment, to which a wire is fixed by means of washers and a nut. This wire is attached to the mandibular splint by means of a bar extension. It is usually not advisable to keep the mouth closed by splints for more than two months, for after

*Read at a meeting of the Section of Surgery, Royal Society of Medicine, held January 22, 1919. Reprinted from the British Journal of Dental Science, July 1, 1919.

that time the careful exercise of function seems to promote increased bone formation in those cases in which some degree of union may take place. Where nonunion is obvious, the early use of the jaws is advantageous in that atrophy and extra-articular ankylosis are prevented. In many cases this is accomplished by the insertion of a small splint on one fragment with a flange extension which maintains correct occlusion yet allows free opening of the jaws. A careful examination of the teeth should be made, extracting such as are sources of infection, and those that are too close to the lines of fracture, and preserving those that will be of service in the immobilization of the parts when the bone graft is performed. The latter point is of great importance, and every care should be taken in the early treatment to prevent undue strain upon the essential teeth. Careful examination should be made at regular intervals, to insure efficient drainage as long as external or alveolar sinuses are existent, and, to determine as accurately as possible, and record the date at which the external and alveolar sinuses have finally become healed.

WHEN TO OPERATE

Clinical and bacteriologic evidence has shown that operations should not be performed until at least six months have elapsed after the complete disappearance of all inflammatory phenomena. Further delay is of benefit in those cases in which the ununited fragments are strong, easily controlled, and fair powers of mastication may be obtained by means of dentures or splints. In the case of edentulous or short posterior fragments that are controlled with difficulty, bone-grafting should be performed at the end of six months, in order to prevent atrophy, displacement or fixation of the free fragment. Without doubt some of the failures reported in the literature may be attributed to operating at too early a date.

THE TRANSPLANTATION OF BONE

The consensus of opinion appears to be that the transplanted bone has varying, but extremely important, osteogenetic properties. Gallie and Robertson[2] have shown that this is due to the osteoblasts present on the periosteal and endosteal surfaces and in the open mouths of the Haversian canals, which are in a position to absorb nutriment from the bathing lymph. As osteoblasts are most numerous on the endosteal surface, they recommend that grafts should include periosteal and endosteal surfaces. Albee,[1] for the same reason, advises a bone graft consisting of all its elements as it approaches more closely a complete physiologic unit—especially in reference to nutritional distribution—which is obviously an advantage. With regard to the osteoconductive property of transplanted bone, Gallie and Robertson state that the rapidity of absorption and replacement of the graft depends on its size, density, and the abundance of the supply of osteoblasts that survive on the surface, the replacement being slower in very thick grafts. With regard to the density of the graft, their experience is that replacement is very rapid in open cancellous bone, such as the rib, less rapid in grafts cut from the face of the tibia, and most retarded in densely compact bone, such as the crest of the tibia. The relative osteogenetic activity of the transplanted bone and of the fragments must vary with the individual case, and therefore the principles outlined should be applied surgically in such a way

that full advantage is taken of the osteogenetic properties of the fragments and transplanted bone, and of the osteoconductive properties of the latter. This will be discussed when describing technic of the operation.

We have not had any experience with osteoperiosteal grafts, but have seen many excellent results in the hands of our colleagues at the Queen's Hospital, Sidcup. This method is best suited to cases where the bony loss is slight, or where there is incomplete union. Neither have we used the pedicled graft which Mr. Percival Cole so strongly recommends, but we intend to use it before long. It might, with advantage, be combined with free iliac crest or tibial grafts or with osteoperiosteal grafts.

We have not had any experience in the use of boiled bone, having confined our work to the use of autogenous free grafts.

TYPES OF FRACTURES AND SPLINTS

These may be conveniently classified according to the relative difficulty in immobilizing one or both of the fragments. This is shown diagrammatically in Figs. 1, 2, and 3, showing the fracture and the general plan of immobilization by dental splints.

Even when specially constructed, dental splints are only capable of very limited modification at, or during the time of, operation. It is preferable, therefore, in most cases to fix the fragments in good position by means of strong dental splints not capable of adjustment, and to carry out the operative technic accordingly.

We have not used the open-bite splint, but expect to do so in the near future, in some cases with edentulous fragments.

The results obtained on this service are in a large measure due to the excellent services rendered by our dental colleagues, Captain B. Mendleson, attached R.A.M.C., and Captain A. H. L. Campbell, C.A.D.C.

THE OPERATION

Fixation of the Fragments.—The necessary dental splints should be cemented to the teeth at least one week before the operation, in order that the mucous membrane of the buccal cavity may become accustomed to them. We have found that frequently small ulcers occur, owing to small irregularities in the splints, the projection of the interlocking devices and the action of the free acid from the cement.

The Anesthetic.—Rectal oil ether anesthesia, supplemented when necessary by intrapharyngeal ether administered through a nasal tube, has been the method employed in eighteen of our cases. We have adopted this method as a routine in bone-grafting, as one most satisfactory in every way.

The Preparation of the Operative Field.—After a preliminary ether and tincture of iodine preparation of the skin, we fix a square piece of sterile dental rubber dam to the cheek and the lower lip, by means of adhesive plaster. By turning this upwards, the mouth is walled off from the overlying towels, which will be subsequently placed, and soiling or contamination of them by mucus or saliva is prevented. At the conclusion of the operation, the rubber dam is turned down, covering and protecting the dressings from the fluids of the mouth. The incision is made in accordance with the position of the bony defect, keeping in

mind the desirability of having the closure below the level of the graft rather than directly over it. The nontouch technic introduced by Sir Arbuthnot Lane is followed. As soon as the subcutaneous tissues are freely exposed, the skin surface is walled off from the wound. The ends of the fragments are exposed and the periosteum is elevated from their external, inferior, and internal surfaces for a distance of 1.5 to 2 cm. on each side of the hiatus. Great care must be taken, particularly on the internal surface, to avoid perforation into the mouth cavity. The height to which the separation may be carried safely may be determined by the previous examination of the mucous membrane over the ends of the fragments and reference to the x-ray plates.

Preparations of the Fragments.—The ends of the fragments should be trimmed back from 1 to 1.5 cm. or more, until bleeding, healthy bone is reached. Intervening cicatricial tissue should be excised and discarded. After some experience with electric bone-grafting instruments, circular saws, etc., used in attempting to shape the fragments and graft by the formation of steps, pegs and dovetailing, etc., with a view to obtaining autofixation of the graft, we have discarded these more complicated methods and instruments, in favor of the most simple. Since taking this step, our results have been better. We do not like the peg and hole fixation on account of the fact that the preparation of the hole in the fragments involves the reaming out of the endosteal tissues, which are of greatest osteogenetic importance. Accurate dovetailing and the formation of steps in the fragments of the lower jaw are quite difficult on account of the general contour and variations in the planes of the fragments. When one realizes that but little more than 1 cm. of the external surface of the jaw in a vertical direction may be exposed with safety, the difficulties in the manipulation of electrically driven saws in so small a space are readily appreciated. These methods usually involve the use of the tibia, and we have observed that in order to secure a good mechanical fit the endosteal surfaces of the grafts have been sacrificed. We therefore prepare the fragments by the use of rongeur forceps, our choice being a Friesner mastoid rongeur forceps and Lane's gouge forceps. We attempt to square off the ends as well as possible, and to leave a ledge above the graft which affords additional surface contact between the fragments and the graft. This is shown in Fig. 1*a*. This method puts a minimum of operative stress upon the interdental splints, precluding any possibility of displacing the fragments from the splints. In the case of gaps, situated anteriorly, a square or butt joint may not be readily obtained on account of the contour and planes of the two fragments. A satisfactory overlapping plane joint, can, however, usually be obtained without much difficulty. Similarly some special preparation with overlapping or notching may be found necessary in the case of free posterior fragments, which may, with advantage, be forced backwards and slightly downwards by the graft. When the bed for the graft is prepared, holes are drilled in the fragments through which two short lengths of Belgian iron wire are passed and held by clamps. Measurements are then taken for the graft.

THE GRAFT

In choosing bone for grafting purposes, we have been guided by the theory that the larger the area covered by osteoblasts in the Haversian canals into which the blood-vessels may project, the better, and the more cancellous the graft is,

consistent with necessary strength, the more rapid will be the change from the transformed section of the transplant to the live bone forming bony union. We feel that the bone that fulfils the above requirements best is the iliac crest. The tibial crest, in our experience, has given good results, also the inner surface of the same bone, but according to the theory, the grafting is rather too compact when the tibial crest is used. Further, the patients may be incapacitated for some time, and fractures of the leg at a later date are by no means rare. The

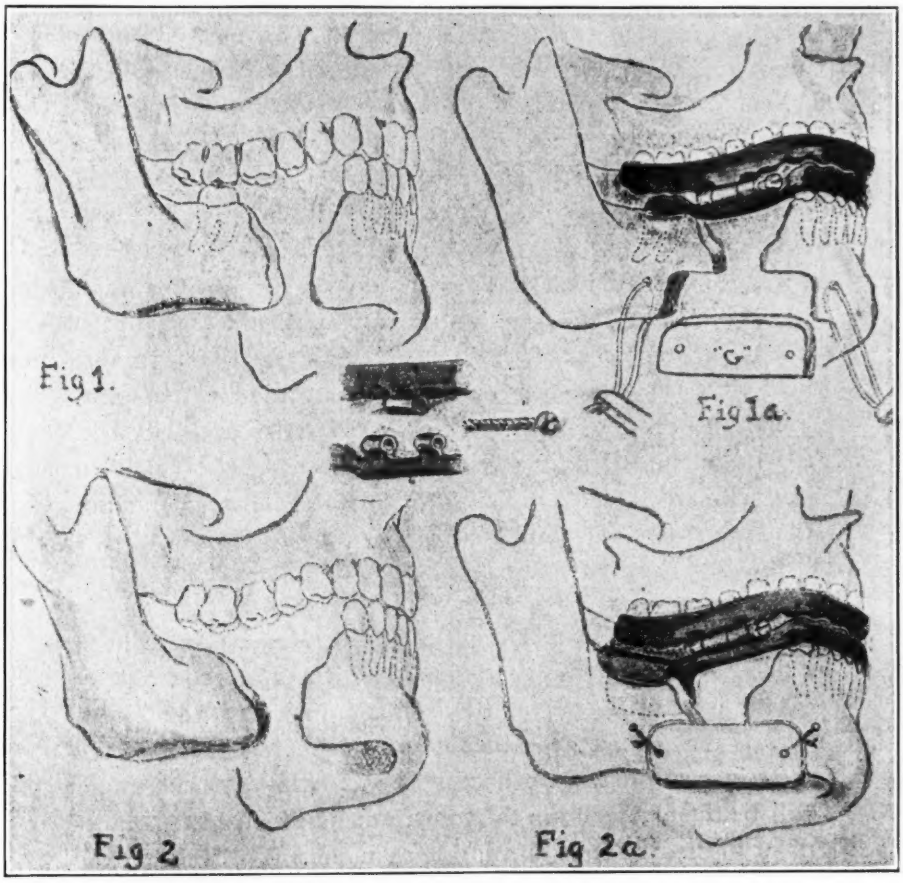

Fig. 1.—Nonunion right premolar region.
Fig. 1*a*.—Fixation of fragments by dental splints; preparation of fragments for graft "G."
Fig. 2.—Edentulous posterior fragment.
Fig. 2*a*.—Control of edentulous posterior fragment by dental splints; fixation of graft.
Inset.—Interlocking device.

rib, in our cases, was not a success, as it seemed to undergo an aseptic absorption, which resulted in a springy mandible, where the graft was long. In these cases, a considerable portion of the outer compact surfaces has been removed before inserting, to allow the fluids of its bed to permeate it. This has also been the reported experience of some German surgeons, and further, in many cases of other surgeons we have examined, where the rib was used, we have noted the same objection. The iliac crest graft is easily obtained, is very cancellous, strong, and particularly adaptable, as any surface may be used. The crest is easily exposed and the required amount removed by thin chisels and narrow

saws. Hemorrhage may be free, necessitating firm pressure and the insertion of a rubber-tube drainage. The graft is readily trimmed and fitted to place. Holes are then drilled in each end of the transplant, through which are threaded the wires previously inserted in the ends of the fragments. These are then tightened, fixing the graft firmly in position. The subcutaneous tissues are then united with interrupted mattress catgut sutures, and the skin closed with horsehair. It is important that all hemorrhage should be controlled before closure. Should any slight oozing persist a short drainage tube to the subcutaneous tissues may be left in position for twenty-four hours. The technic we have employed for incomplete alveolar union is similar, as shown in Fig. 4*a*. For incomplete basilar union, we have used the tibial inlay graft, as in Fig. 5*a*.

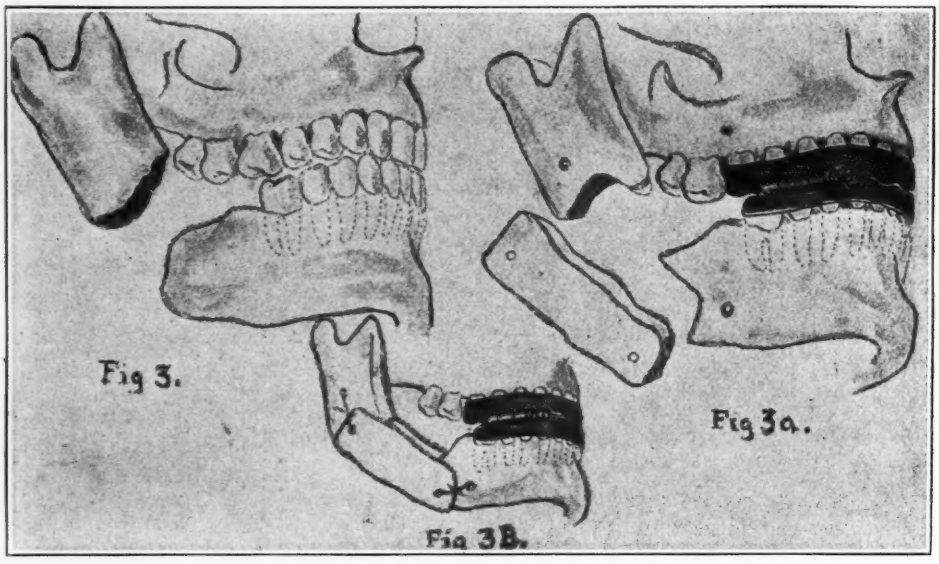

Fig. 3.—Nonunion region of angle—control of posterior fragment most difficult.
Fig. 3*a*.—Splint fixation of anterior fragment; preparation of fragments for graft.
Fig. 3*b*.—Posterior fragment wedged backward by graft.

POSTOPERATIVE COURSE—TREATMENT—COMPLICATIONS

The patients are kept on a fluid diet for a few days, after which ordinary minced diet may be ordered. It is advisable to keep the iliac crest cases in bed for a period of ten days or two weeks, in order to avoid the formation of hematomata which may become infected. In several of our cases slight infection occurred, which, under treatment, healed nicely without any ill effects. The facial incisions healed *per primam* in fifteen out of our twenty-three bone grafts of the lower jaw. In two, slight suppuration necessitated the removal of the wires, and the grafts were removed in four cases. The splints are left in position, keeping the mouth closed for two months. If both fragments are well controlled by the lower splint, the mouth may then be left open and function exercised carefully. If the posterior fragment is free, it seems advisable to keep the mouth closed for three or four months. During this period the splint-pins may be removed at intervals, and the mouth opened for examination. We have been removing the splints about four months after operation. In some of our

cases splints have been left on for a much longer period on account of the fact that the patients were away on extended furlough. The time of removal of the splints is more or less governed by the progress shown in the x-ray.

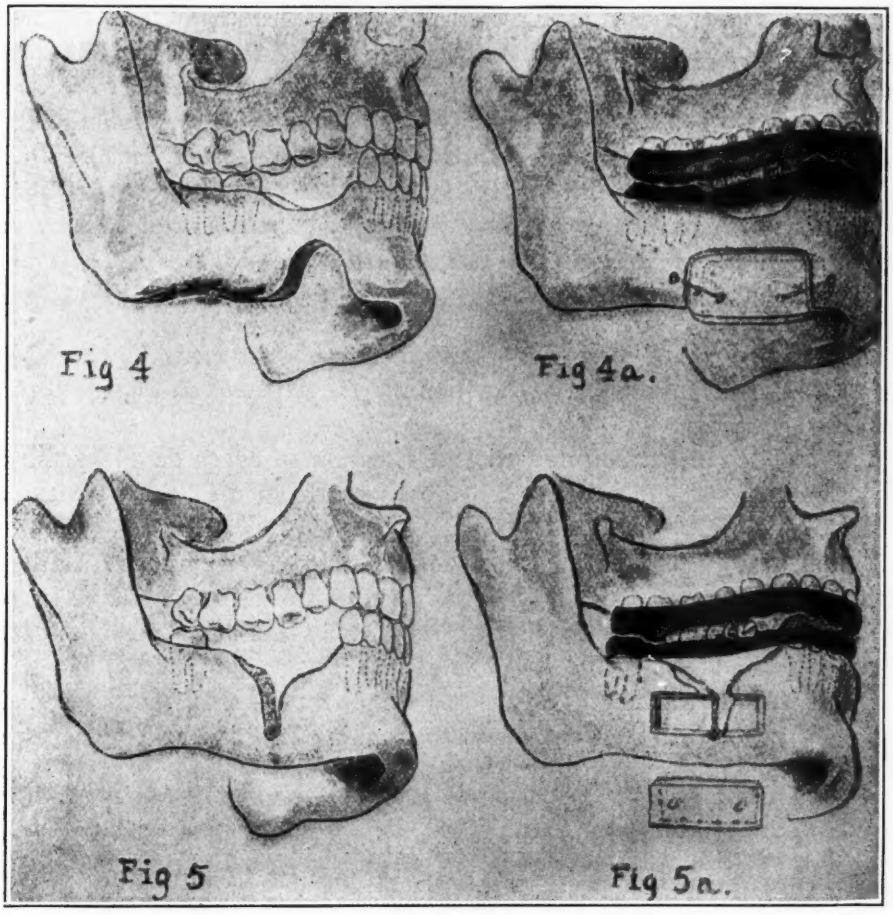

Fig. 4.—Incomplete union, alveolar; basilar defect.
Fig. 4*a*.—Splint treatment and fixation of bone graft.
Fig. 5.—Incomplete union, basilar.
Fig. 5*a*.—Preparation for inlay bone graft.

RESUME OF CASES SHOWN

Ten patients were shown. Two had some degree of alveolar union, with slight but definite movement at the site of fracture, after a year or more of observation, and the operations were performed with the view of obtaining strong union. In one of them infection occurred, necessitating the removal of the tibial graft. A large amount of new bone was, however, laid down, resulting in strong bony union. The second was an iliac crest graft, in which strong bony union was obtained. In the remaining eight patients (nine grafts), separation of the fragments, varying from 0.5 cm. to 6 cm., was found at operation. Both fragments were well immobilized by the splints in three cases, and strong bony union, with good function, was obtained (one tibial and two iliac crest grafts). In one case the posterior fragment was displaced from the splint at the time of operation. An iliac crest graft with hole and peg fixation at one end was used. Union has progressed very slowly, but is finally becoming bony. The functional re-

sult is good. In one patient immobilization was most difficult and imperfect on account of the few remaining teeth being weak and the absence of upper teeth. The connective tissue bed for the graft was thin, containing considerable scar tissue. A bent, split rib-graft was used. Following the operation there was a recurrence of a salivary fistula, accompanied by slight suppuration, necessitating removal of one of the wires. The parts are now well healed and the graft is in position. The result is in doubt. The posterior fragments were not controlled in three cases (four grafts). In one (iliac crest) the functional result is good, but strong manipulation reveals a definite spring between the graft and the anterior fragment. In the remaining two cases (one double-graft tibial and one iliac crest), union progressed very slowly, but finally complete bony consolidation took place.

CONCLUSIONS

1. Bone grafting of the lower jaw is an operative procedure, whereby union of the fracture and restoration of function may be expected in a large percentage of cases.

2. Complete cooperation and careful attention to every detail by the dental surgeon and the surgeon concerned are essential from the "early treatment" to the "final" stage.

3. Full advantage should be taken of the osteogenetic activity of the fragments, and of the transplanted bone, and also of the osteoconductive properties of the latter. The iliac crest is, in our experience, best suited in most cases for the bridging of defects in the lower jaw.

4. The operation should be made as simple as possible, the object being to obtain good contact of the graft to fresh, healthy bone of the fragments, maintaining the same firmly in position by wiring.

REFERENCES

[1]Albee, F. H.: Bone Graft Surgery, Philadelphia and London, 1915.
[2]Gallie, W. E., and Robertson, D. E.: Transplantation of Bone, Jour. Am. Med. Assn., 1918, lxx, p. 1134.

ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Ulcerative Lesions of the Mouth and Pharynx Due to the Vincent's Bacillus. David and Hegguet. La Presse Medicale, 1920, No. 6, p. 54.

An aftermath of the war in Roumania is represented by bucco-pharyngeal lesions having a peridental, buccal and tonsillar localization, usually developing insidiously without serious impairment of the general health, without causing glandular enlargement or a rise of temperature. On examniation, the microscope invariably revealed in these lesions the presence of the fusiform Vincent bacillus with its spirillum. Prior to the war the characteristic lesions of Vincent's angina were rather uncommon, but since a year or longer, this disease which began in Roumania is also observed among the soldiers of French regiments. One of the authors has insisted for a long time past on treating all ulcerations of the mouth, including cancer, with glycerine solutions of arsenobenzol, the results proving very favorable. These solutions relieve the pain, even in cancer cases, and remove the offensiveness of all buccal wounds and ulcers; suggesting that the spirilla which have their normal habitat in the mouth play an important part in all secondary infections of the buccal cavity. The treatment of buccal spirillosis with arsenic is generally recommended, and in the authors' personal opinion, intravenous arsenobenzol medication is less efficient than local treatment. Whenever practicable, they apply the combined treatment, namely, arsenic in the vein and on the wound; where this is not feasible, they limit themselves to 1 local treatment with arsenic. The wound is first cleansed with a silver nitrate solution (1:10), which mildly cauterizes the surface. After this, the ulceration and bleeding surface is painted with a solution of arsenobenzol, 90 centigr. per 30 gr. of glycerine. Presumably this solution is altered on contact with the air, but no untoward effects were observed to follow the employment of solutions which were about a fortnight old. The first effect of this treatment is the disappearance of the pain in chewing and swallowing; the wound then becomes clean, and the false membrane which covers it increases in strength. When this is removed from the buccal mucosa in the course of treatment, at the end of a few days, the wound is seen to be protuberant instead of depressed, projecting above the surrounding mucosa. Instead of a deep ulceration, solid granulations are present and the process of repair is under way. Gradually, the buccal mucosa forms a cicatrix which corresponds to the interdental line. The intravenous in-

jections of arsenobenzol are administered every six days, beginning with 30 centigr. and adding 15 centigr. at each injection. As a rule, the patients are placed on a milk diet and are given a prescription of sodium bicarbonate gargles, 5 per cent. As soon as swallowing has ceased to be painful, the ordinary diet is resumed. Under this mode of treatment, the disease is generally cured in from twelve to twenty days.

Zone Therapy. E. F. Bowers. Medical Review of Reviews, 1919, xxv, No. 11, p. 673.

Based upon favorable experience in several illustrative cases, the author advocates that zone therapy be given a trial after other means have been exhausted. He describes a remarkable experience with a case of sciatica due to an impacted third molar, in which zone therapy cleared up a diagnosis that it had not previously been possible to render. The patient was a woman about forty-five years of age, who had suffered from sciatica of the right side for three months, finding relief only through the use of morphine. She was unable to move in bed without excruciating pain in the right hip and leg. The teeth on examination were found to be in very good condition, and the right molars, in particular, were all sound. But it was noticed that the lower right third molar—the wisdom tooth—which is in the same "zone" as the sciatic nerve, was impacted, the anterior cusp being caught on the distal aspect of the second molar, and the posterior cusp having projected above the gum to its normal position. The roots of the third molar were thus forced backwards and exerted a constant pressure in the "zone," which found its expression in the perennially ready sciatic nerve. Extraction was decided on, and in order to produce anesthesia, pressure was used upon the fingers first, and later directly upon the inferior dental nerve. After three or four minutes, the tooth was removed without causing the slightest sensation of pain to this highly nervous patient who all the time had been calling for a general anesthetic. When she turned on her side to expectorate, she was amazed to find that there was now no pain in her leg, nor did it recur, and three days later she was discharged from the hospital, cured. This was four years ago, and there had been no more sciatica in her case, so far as could be learned, up to the time of the report.

Alopecia Following Injuries of the Jaws. Bettmann. Dermatologische Wochenschrift, 1919, No. 3.

Alopecia of the face appeared exactly twenty-three days, and alopecia of the occiput exactly twenty-two days after x-ray transillumination on account of a slight right-sided gunshot injury of the mandible. The loss of hair was limited to the right side. At the first transillumination, the tube had been adjusted to the right cheek; at the second, to the right side of the occiput. The explanation of the occipital alopecia, as suggested by Jaquet, to the effect that the loss of hair is usually induced by an irritant derived from the teeth or their immediate surroundings and acting by way of the nervous conduction, does not fit this case, for the alopecia did not occupy the trigeminal territory, and an injury through the x-rays seems to be responsible.

The Pathology of Glossitis. Levinstein. Centralblatt für Chirurgie, 1919, xlvi, No. 13, p. 34.

The author's observation is characterized by the fact that the affection was not restricted to the tongue alone, although it first appeared and was predominantly localized in this region, but also involved the mucosa of the lips, cheeks, gums, palate, and uvula. Symptoms on the part of the tongue preponderate in these cases, in the form of severe pains which become aggravated or subside according to the exacerbations and remissions of the disease. In the presence of severe pain, the ingestion of food is seriously interfered with, the result in protracted cases being a considerable loss of weight. Treatment in the form of local applications and gargling proved inefficient.

Epidemic Gingivitis. S. Lieben. Wiener klinische Wochenschrift, 1919, No. 2.

In the early part of the winter of 1916, the author observed a number of cases of gingivitis, which according to the mode of onset and the similar pathologic symptoms as well as the clinical course, showed an epidemic character and were distinguished by the long duration and the obstinacy of the phenomena. Treatment with hydrogen peroxide, 3 per cent, proved most desirable, the solution being injected into the individual germ pockets by means of a syringe with a blunt cannula in order to accomplish a mechanical removal of the pus.

Unusual Features of Infectious Diseases in the Eastern Theatre of the War. G. Loeffler. Fortschritte der Medizin, 1919, No. 4.

Inflammatory swelling and reddening of the mucous membrane of the jaws and cheeks, without hemorrhage, were frequently noted by the author in cases of recurrent fever. Also in typhus exanthematicus, buccal infections often occurred in Roumanians referable to defective hygiene of the mouth, and not infrequently resulting in inflammation of the parotid gland. In three instances (two cases of recurrent fever, and one case of typhus exanthematicus) this complication led to death, as sepsis could not be prevented in spite of deep incisions.

Oral Septics and the General Practitioner. R. S. Pennycuik. Australian Journal of Dentistry, 1919, xxiii, No. 11, p. 367.

Septic conditions in the mouth may give rise to the following local effects: Stomatitis and gingivitis of every degree, inflammatory pustular, sloughing, or gangrenous. Periostitis and ostitis, alveolar necrosis, tonsillitis, pharyngitis, otitis, and sinusitis. Enlarged lymph glands. Postpharyngeal abscess. Meningitis. In these local conditions the chain of events is generally easily traced, namly oral septic followed by pharyngitis and infection spreading by way of the Eustachian tube to the ear, or again infection of the maxillary antrum followed by general infection of the paranasal sinuses, or antrum infection extending to the orbit and septic meningitis. A point of importance is the association of mouth breathing with oral septic. This occurs in patients who through nasal stenosis or other causes, are habitual or intermittent mouth breathers. In such

cases attention to oral cleanliness is vital, in order to lessen the susceptibility to infection. A septic mouth means a continuous onslaught of bacteria and their products on the tonsils, until their resistance is considerably impaired, with a consequently increased risk of infection. At times in adults, but perhaps more often in children, one finds what is practically a chronic toxemia associated with a septic mouth, a general feeling of ill health, malnutrition, lack of energy, sallow, unhealthy appearance, a history of gastrointestinal disturbance. This in many cases is due to absorption of toxic products of micro-organisms and also to absorption of toxins produced from abnormal digestive processes. The sepsis produced by gold fillings, gold caps, gold bridges, gold crown, and especially by fixed dentures built in, on, and around diseased teeth, is particularly severe and harmful in its insidious septic effects, and great responsibility is attached to the performance of crown, bridge, and plate work.

Comparative Pathology of Influenza. S. Korach. Berliner klinische Wochenschrift, 1919, No. 10.

The localization of influenza on the buccal mucosa manifests itself by a streaky reddening of the inner margin of the anterior palatine arch, tapering off towards the floor of the tongue, and radiating in fan-shape towards the uvula. The severe pains in the throat complained of by patients suffering from influenza-angina are possibly referable to these changes. Diagnostic importance is attached to the so-called influenza-tongue, consisting in redness and swelling of the papillae in the anterior third of the tongue.

The Tongue in Influenza. Stolte. Berliner klinische Wochenschrift, 1919, No. 6, p. 142.

The author repeatedly observed a pronounced reddening of the tip of the tongue, or a marginal glossitis, together with mild edematous swelling and redness of the pharyngeal ring, involving only portions of the soft palate and the uppermost segment of the epiglottis. In other cases, there existed a dry coryza and mild pharyngeal catarrh, not infrequently, small light vesicles were demonstrated on the soft palate.

The Practical Use of the Dental Radiograph. Sterling V. Mead. The Dental Cosmos, 1919, lxi, No. 10, p. 965.

The teeth as foci of infection. The author is very enthusiastic regarding the practical usefulness of the radiograph when used in the right way. He is thoroughly convinced of the fact that the teeth are the source of a great deal of systemic disturbances, and he thinks it is the duty of every dentist to regard the patient's general health as more essential than any restoration. The loss of the teeth can not be compared with the loss of a life. But the fact must not be lost sight of that apical infections of the teeth are not the only foci of infection in the mouth. Periodontal infection, or pyorrhea alveolaris, undoubtedly causes systemic trouble, and is itself associated with systemic disorders. Swelling and infection in the region of the submaxillary gland is due to the teeth in most cases, and may come from either the upper or lower teeth. Where patients are en-

deavoring to locate a focus of general infection it is not enough in every case to simply make an ocular examination and give a positive statement that there is no trouble as there are many cases where it is impossible to determine whether or not there is infection without a pulp tester or an x-ray picture in case the tooth is devitalized. Most cases of systemic disorders seem to come from comparatively small radiolucent areas. This may be due to the fact that the most virulent of the pyogenes group of bacteria have a tendency to infiltrate to other parts, and those of less virulence tend to become localized.

Concerning the interpretation of radiographs, the author emphasizes that it is very unwise for anyone to undertake to interpret any film without having a knowledge of the case, and the radiograph should only be used as an aid to supplement the clinical observation of the operator. If there is infection upon a tooth, it is usually very easy to determine, if the picture is perfect. Cases where one is unable to determine whether or not there is infection are exceptions rather than the rule.

Anatomical Demonstration of Atavistic Origin of Fifth Cusp. M. Baudouin. Bulletin de l'Academie de medicine, Paris, 1919, lxxxi, p. 402.

The so-called Carabelli tubercle, which has been interpreted by some investigators as a pathologic lesion, the result of constitutional disease, notably syphilis, was shown by the author's findings on prehistoric upper jaw bones to be an atrophied dental cusp, the anterointernal cusp of the first large upper molar, about to disappear in the neolithic age. In the present epoch, this "tubercle" when present, therefore, constitutes simply a recurrence of an atavistic arrangement, which still existed in 50 per cent of the cases of dolichocephalic individuals of small stature, thousands of years ago. It is merely an accidental recurrence, an anatomic survival, indicating an ancestral condition which at one time was normal in dental phylogenesis. Accordingly, it can not be a pathologic lesion due to syphilis or any other faulty diathesis. The largest and most typical tubercles are seen in the teeth of the youngest children (three to ten years of age) in the author's prehistoric material. In proportion as the tooth increases in age, irrespective of its being worn by use, the tubercle seems to become somewhat atrophied, while the rest of the crown does not change in size since the formation of the dentin covering in the alveolus. The obvious conclusion is that Carabelli's tubercle can not be pathologic, for all affections of congenital character tend to become more accentuated during the growth of the child; and that it can only be of atavistic origin.

The X-ray Movie. American Red Cross News Service.

Combining in a single apparatus the moving picture camera and the x-ray machine, two French scientists, Drs. Lormon and Comandon, have worked out a "radiocinematograph" which makes possible movies of the interior functioning of living organisms. Although not yet entirely perfected, the new invention has reached the practicable stage, and it opens up new fields of investigation which radiology will not be slow to enter.

Medical experts attached to the American Red Cross Commission to Europe

are already considering its application to special problems raised by the unprecedented epidemics now sweeping central and eastern Europe.

Discussing the invention, Dr. Lormon states that the greatest difficulty encountered was the danger of thermic infiltration by the ultra-violet rays during the photographing of the subjects. To overcome this difficulty the inventors devised a method for changing the character of the rays employed, an achievement comparable to the original discovery of the roentgen ray.

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EDITORIALS

Dental Nomenclature

FOR a number of years, the American Institute of Dental Teachers has had a Committee on Nomenclature that has made attempts to standardize and modernize dental terms and has succeeded to a certain extent. The American Society of Orthodontists has a similar committee and it has made some suggestions and considered several terms in the last few years. Nevertheless there seems to be a great need for the standardizing of dental terms, not only in regard to dentistry itself, but also terms should be adopted for use in dentistry that have the same meaning in collateral sciences.

We recognize that dentistry, separated as it was in the beginning from medicine and the other allied sciences, unfortunately adopted a few terms which are used in no other branch of science with a similar meaning. It also seems that when the attention of the dental profession is called to the use of these improper terms, there is a tendency among some men to continue the use of the "outlaw names," regardless of the fact that dentistry is the only profession using them.

So far as the mechanical side of dentistry is concerned, we recognize that any special mechanical procedure may call into use certain distinct terms in order to describe some definite thing. The use of special terms became necessary with the development of the automobile and the aeroplane; such necessities may have arisen to a certain extent in mechanical and operative dentistry. However, there is one department of dentistry which unfortunately has adopted terms and uses certain names which have various incorrect meanings. Those terms which are most often used incorrectly and improperly are the ones which, above all, have a definite and scientific meaning and do have a definite meaning in other branches of science; this makes it appear all the more ridiculous for the dentists to continue to use terms which are not recognized by men in allied professions. We refer particularly to terms used in anatomy, especially dental anatomy.

Dentists have for a long time spoken about the "articulation of teeth" in which they have referred to the relation which the teeth of one arch bear to the other. Arguments have been waged long and hard as to the distinction between occlusion and articulation, some men claiming occlusion was the relation of the inclined planes of the teeth when the jaws are closed, others claiming articulation was the relation of the inclined planes of the teeth during mastication. As a matter of fact, of all the various scientific societies that consider anatomic subjects, dentists have been the only group that have adopted the term articulation as having any meaning whatsoever in regard to the relation of the teeth in one arch to the other. In all other anatomic societies, the word articulation has a definite meaning in regard to the manner in which one bone functionates or approximates with another. For a number of years, comparative anatomists in speaking of the relation of the lower teeth to the upper, used the term "mutual antagonism" which was not exactly satisfactory, but at least distinguished some particular thing, and did not confuse two anatomic conditions with each other. Later some of the foremost comparative anatomists adopted the term "occlusion" as being appropriate in describing the same thing they formerly understood as "mutual antagonism," and the term occlusion covers everything that was ever embraced by the incorrect use of "articulation." Nevertheless, we find a number of dental educators still insisting upon the use of the word "articulation" as describing the relation of teeth of one arch to the other. This is an incorrect and obsolete term, and is not recognized by any other group of men.

A few years ago, some of the early dental writers, in describing human teeth, adopted the terms "bicuspids and cuspids" as being the names for certain teeth in the dental arch. The "cuspid" in the human series is supposed to be the third tooth from the median line, while "bicuspid" was applied to the fourth and fifth teeth from the median line. These names were based upon the shape of the tooth, in that the third tooth from the median line was a single cusped tooth and was therefore called a cuspid, while in the upper arch the fourth and fifth teeth having two cusps were called bicuspids. The early dental writers using that false nomenclature and classification were not recognized by any of the other anatomic societies. The names of these teeth based upon their shape is more or less correct so far as the teeth in the maxillary arch are concerned. Of the mandibular teeth, we find the third tooth from the median line is also a single cusped tooth,

but when we approach the fourth and fifth teeth, we find the nomenclature based upon the shape of the teeth becomes very often a decided misnomer. While the fourth tooth from the median line in the mandibular arch may possibly be termed a two cusp tooth, we find it has a decided tendency to be a single cusp tooth, the second cusp being nothing more than a cingulum. When we approach the fifth tooth from the median line of the mandibular teeth, we find this tooth may be two cusped, but in a great many cases it presents three cusps, which proves the plan of nomenclature based upon the shape of the teeth becomes decidedly wrong. Of late years more scientific dental writers have insisted on calling the third tooth from the median line the canine, based upon its shape, evolution and anatomic characteristics, and the fourth and fifth teeth from the median line they have called premolars. The terms canine and premolars have long been used by the European writers, and have also been used by all other scientific anatomic societies except dentists. The writings of A. Hopewell Smith and M. N. Cryer contain the words canine and premolar in preference to cuspid and bicuspid.

The reasons given by some of the American dentists for not adopting the terms canine and premolar, are very unscientific, and in some instances are almost amusing. These men have opposed the adoption of the correct terms simply because they have learned to use the term cuspid and bicuspid and for that reason they are opposed to any progress in the science. We find the extreme to which some of the dental educators go in persisting in the use of these obsolete and incorrect terms is almost ridiculous. Recently in one department of one of the university dental schools, the head of the department, being a young man of more modern scientific education, was using the terms canine and premolar in his department, based upon his exact knowledge of dental anatomy obtained not only in dentistry but in other sciences. He was informed by the dean of this progressive (?) university dental school that the terms canine and premolar were not to be used, because Dr. Black years ago used the terms "cuspid," and "bicuspid" and as they were using his *Operative Dentistry*, those were the terms which were to be used. We are willing to give Dr. Black credit for a great many things he did in dentistry, but we very seriously doubt if he himself were alive that he would be willing to shoulder the responsibility for causing the dental profession to use such incorrect terms as "cuspid" and "bicuspid."

Another lesson which can be drawn from the example which we have cited in regard to the use of obsolete terms is the fact that here we have a university dental school which is supposed to be a leader of dental education, setting up the example and continuing the use of terms which are unscientific and not used by any other scientific men except dentists. It would be much better if such institutions would not claim to lead in dental education until they were willing to drop obsolete ideas and hobbies because the dean was accustomed to use those terms when he went to school.

Unfortunately, the orthodontists have become accustomed to use certain terms, which they have adopted from dental anatomy as written by dentists, which anatomically have an incorrect meaning. We refer particularly to the use of the terms "mesial" and "distal" as describing surfaces of the teeth; they are incorrectly used from an anatomic standpoint. This was called to the attention of the profession by Dr. A. Hopewell Smith several years ago. We realize that

they have become so firmly anchored in the dental profession as describing the surfaces of the teeth that it will be very difficult to get other and more accurate terms adopted to be used in their place for some time. These terms as used in the description of the surfaces of the teeth are inaccurate and incorrect when used in the description of "arch relation." For example, considering anatomic descriptions of the human body, we find the distal surface of a part is that portion farthest removed from the median line. For instance, describing the ulna and radius, we find the distal ends of these bones articulate with the bones of the wrist, which would be that portion farthest removed from the median line of the body. Therefore in describing a dental arch, which is in distal occlusion, orthodontists have adopted that term to mean that the lower teeth occupy a posterior relation to the upper teeth, which would necessarily mean that in "distoclusion" cases, the lower teeth were nearer the median line of the body than they would be in "mesioclusion." Owing to this anatomic error in use of terms we believe it would be a better plan in speaking of distoclusion cases to more accurately describe them by speaking of a "posterior relation of the mandibular teeth," which would be anatomically correct, and also "anterior relation of the mandibular teeth" instead of using the term "mesioclusion." In reality, from an anatomic consideration a mesial relation of the lower arch is really an anatomic "distal" position of those teeth in regard to the median line of the body, in the same manner that the hand is on the distal end of the arm. However, in order that the terms may not be used with two meanings, a number of men who have given this matter study, are using the terms "anterior relation of the mandibular teeth" and "posterior relation of the mandibular teeth" as being more descriptive and more anatomically correct than the terms which have been adopted.

We believe that any one who is interested in the advances of dental nomenclature, should accept scientific terms that are brought to their attention and not try to block the wheels of progress, as some of the older educators from universities are doing, by basing their arguments on the facts that they learned certain terms and are not going to learn any others or allow any others to be taught in their schools. If dentistry is to be a science along with other allied branches of science, it can not have a separate nomenclature and language of its own, or it will continue to exist by itself as it has in times past.

Federspiel's Dental Clinic

"BEGINNING May first, nineteen hundred and twenty, Drs. Federspiel, Rohde, Morgan and Berry will conduct their practices under the name of Federspiel's Dental Polyclinic."

This announcement is rather unique in the dental profession, and marks what is probably the first formation of a dental unit composed of a number of men, each one of whom has specialized in some particular line of dentistry. We know that in other towns, men have combined their efforts, and under a partnership basis have conducted a dental practice. In some cases, this arrangement has been satisfactory; and where it has failed, it has not been so much the fault of the arrangement, as it has been that the men who had made up this dental unit

have possessed personalities that would not blend. From the standpoint of the public, we are inclined to believe the formation of dental units, or the conduct of a dental practice, the same as the Federspiel Dental Polyclinic is to be conducted, offers many advantages over the single practitioner of dentistry that has been common in times past. The advantage of "hospital diagnosis" in medicine over a common office diagnosis is that a number of men skilled in different lines pass upon the patient, each one from his own standpoint, and each one also considering the knowledge and information that the other one has gained. When knowledge from these various specialties is brought together and is made to coincide, the patient will undoubtedly receive better service than when the practitioner leaves the case to his own judgment. From the public standpoint, such a plan as Drs. Federspiel, Rohde, Morgan and Berry are attempting to work out possesses many advantages.

We realize the greatest difficulty is going to come from the profession because in almost every instance where a number of dental men have combined in a single office, we have heard the expression the "department store office" used by their competitors in a sort of a depraving manner. When we go a step further, as these men have done in the formation of Federspiel's Dental Polyclinic, we are afraid a number of the profession, especially in competition to the enterprise, will speak disrespectfully of the combination and even attribute it to nearing an "advertising office," owing to the fact that it is the intention of the Federspiel's Dental Polyclinic to take care of a certain amount of charity work in order that they may fulfill their greatest usefulness to the public.

However, the success of this remains to be seen, and we are inclined to believe, from the standpoint of the public, a group organization can render better service to the laity than they can render by working individually, each man for himself. We also believe that it will only be a comparatively short time until more dental groups will be formed, which eventually will closely approach hospital practice in medicine, with the result that several men working together, each man skilled in his particular specialty, will be able to render better dental service to the public than the individual working alone.

The success of the Federspiel's Dental Polyclinic, both from a professional and lay standpoint, will be watched with a great deal of interest, and we believe marks a step forward in giving the best service to the greatest number.

"The Golden Rule in Orthodontics"

"DO UNTO others as you would that they should do unto you," is not only axiomatic, but a religion that, if consistently followed, affords but little basis for criticism.

Why would this time-honored Golden Rule not be a beautiful precept to be strictly adhered to in referring an orthodontic case, under treatment, to an orthodontist in some other city or remote part of the country?

Who is there of experience in the treatment of orthodontic cases, who has not many times experienced delicate situations in which diplomacy of the most expert variety was required to prevent controversies and misunderstandings.

All this is a result of the operator having been referred a case of malocclusion under treatment, at the same time being furnished no previous history whatsoever, no records, casts or photographs of his case.

To glean this necessary information entirely, such as one can from the patient, is not only unfair to the new operator who takes charge, but the first operator is almost invariably misquoted, his statements garbled, which automatically creates a lack of understanding between the two men.

If an orthodontist, to be properly trained, is expected to spend two weeks of his special course to prepare himself to properly complete scientifically made plaster casts as a record of his case, if he, when in practice takes pride in his most exhaustive and complete paper records, even to the dates of fitting individual bands on the teeth, if he takes his original photographs as a unit for his case records, if all this is of prime necessity (and that it is necessary has never been successfully contradicted), then it is, to say the least, no more than common courtesy to send these records in detail, together with any and all other information which may have a bearing on the case to be continued, on to the man who is expected to complete the case.

There are certain resort cities in this country in which these referred cases, rather than being desirable to the practices of the orthodontists located in these cities, become no small burden to the busy man. He should be given all information possible in regard to the history of such cases, including financial arrangements and anything which might have a bearing on his treatment and which might aid him in his handling of the case. It has been contended, by some practitioners, that the matter of the financial transaction as it existed between the operator who started the case and his patient is of no concern to the man to whom the case has been referred; inasmuch as the second operator knows what his own time is worth and his fees for completing the work should be arranged accordingly; furthermore, that it is purely a private matter between the operator and his patient. This would appear logical in theory but in practice does not work out for the best interests of all three persons concerned in the transaction.

To adhere to this latter basis ultimately means that the patient usually receives as vigorous a shock from the second operator as was received from the first, for the reason that every man of experience knows it is worth more to finish a case than it is to start it. Notwithstanding this, the fact is patent that the exact point at which a case is "finished" might be a point of no small amount of contention between two of the most skillful operators. This all reminds us of the story told by a brother dentist in a recent discussion of orthodontists and orthodontics in general. He said, "The work of the orthodontists is most commendable and their results are beautiful, however, these results sometimes remind me of the little boy, who on Christmas morning, looking into his stocking found an old rope which obviously had been used for tying a horse. The boy, in his great enthusiasm and excitement of the occasion exclaimed, 'I got a pony but he got away.' The point, then, is the second operator must assume the responsibility that the 'pony does not get away.'"

It is said in the army that the earmark of an experienced officer is the ability to successfully "pass the buck" to his subordinate, then in orthodontics when we

"pass the buck," it can just as well be passed with a goodly portion of the Golden Rule mixed in, which will save many misunderstandings, also save the orthodontist from the reflection cast by being misquoted by his patient, who usually does so, but not always intentionally.

It is to be remembered that at best the second operator is usually employed as a compromise, he being only a by-product of the patients' having changed their place of residence and his services should be ushered into the case with all available history and data of the case. It has been said by some men of wide and vast experience that "it requires a better orthodontist to finish a case than it does to start one."

Then there is the type that is so well known, that can be recognized by the familiar "Dr. X——— said that the case was practically finished but to have you look at it once in a while." Dr. X——— might just as well have said, "You go to Dr. Y——— and tell him to look at you, then when my work starts to collapse, go back to Dr. Y——— and have him treat you again and tell him not to charge you anything for it." A courteous letter should be sent from Dr. X——— to Dr. Y——— including a complete history, and Dr. Y——— will, nine times out of ten, leave no stone unturned to complete the case and bring it to a successful termination.

There is still another type of referred case. The patient has changed his place of residence, and has been referred to no man in particular, but has been admonished to consult no orthodontist in regard to the case until he has been satisfied that the eminent doctor uses only the famous "Plymouth Rock" wire appliance in his work. These patients, as a result of such advice, usually indicate a decided preference for either the Buick type of treatment or the Dodge, and seem to be well advised that the Buick type can be expected to be much more expensive.

There is surely a place for the Golden Rule in the referring of orthodontic cases.

ORTHODONTIC NEWS AND NOTES

The editors desire to make this department a permanent feature of the Journal, but in order to do so must have the full support of the orthodontic profession throughout the country. We would deem it a great favor if our subscribers and readers would send in such announcements as might be of interest to the profession.

Notes of Interest

Beginning May 1, 1920, Drs. Federspiel, Rohde, Morgan and Berry will conduct their practices under the name of "Federspiel's Dental Polyclinic," 413-424 Wells Building, Milwaukee, Wis.

Dr. A. W. McClelland announces that he has moved his office from Birks Building to suite 606 Drummond Building, Montreal, Canada. Practice limited to orthodontia.

Dr. H. C. Metz announces the removal of his office from the Jenkins Arcade to 1201-1203 Hiland Building, Pittsburgh, Pa. Practice limited to orthodontia.

Mr. and Mrs. Robert H. Taylor announce the marriage of their daughter, Florence Grace, to Dr. Harry Wellington Wilson, on Tuesday, May 4, 1920, at Denver, Colorado.